Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

AVMA Convention—Cleveland, August 19-22, 1957

Contents continued on adv. pages 2 and 4

Vol. 131 **July 15, 1957** **No. 2**

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Bisulfa Solution, 12.5%

For control of
bacterial septicemia,
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In herd treatment especially, where convenience of use points to feed or drinking water medication, dispense Merzol bisulfa solution. Therapeutic efficiency and economy characterize Merzol. Included in the Merzol formulation are the sodium salts of sulfathiazole and sulfamerazine, a combination which provides rapid action, a wide range of bacteriostasis, low toxicity, and the ability to maintain high blood levels longer. Merzol is an important addition to the practitioner's stockroom for convenient use in feed, water, or as a drench. Available in gallons.

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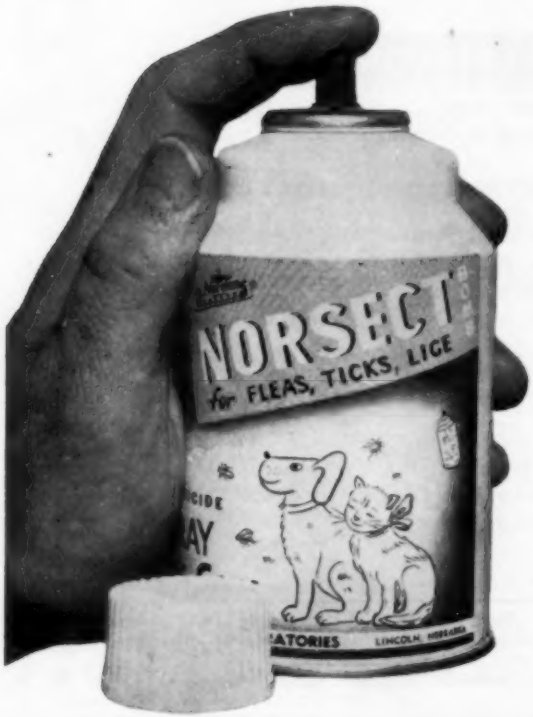

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Journal of the American Veterinary Medical Association

CONTENTS

Continued from Cover

SURGERY AND OBSTETRICS

CLINICAL DATA

NUTRITION

$15.00 per Annum — Single Copies, $ .75 Prepaid in U.S.
Canada and Pan American Countries, $15.50; Foreign, $16.50
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Correspondence

May 22, 1957

Gentlemen:

I recently spayed a 5-month-old kitten that was pregnant, the uterine enlargements being approximately 1 inch in diameter. The 6 fetuses were estimated to be at least 1 month old.

Since this is the youngest cat that I have seen pregnant, I would like to know whether any other veterinarian has seen any younger.

I first saw the kitten Jan. 10, 1957, when it was 2 months old. The owners knew the litter it came from. In the middle of March the client called and described actions that sounded like the kitten was in heat. Since it was only 4 months old at the time I did not feel that it was possible but hedged in my answer. Pregnancy was established at the time of the operation.

Very truly yours,
s/N. Simon
Scarsdale, N. Y.

• • •

May 27, 1957

Dear Dr. Aitken:

Your correspondent, Dr. John Craige, has exercised his American right to a dissenting opinion. His letter published in the JOURNAL of May 1, 1957 (adv. p. 4) declares him to be in perfect disagreement with my opinions in regard to the examination of dogs at dog shows. Actually, the opinions I have expressed are not mine alone, but represent the unanimous opinion of the Public Relations Committee and the Council of the Southern California Veterinary Medical Association. I respect Dr. Craige's right, but I fear his rebuttal is not based on a careful reading of the report of my talk given at San Antonio. To use Dr. Craige's own terminology: I have seldom been so perfectly misquoted.

First, my report did not suggest that exhibitors pay for examinations. To the contrary, I stated flatly that examinations should be free if performed at all.

Second, there was no suggestion that veterinarians no longer be present at dog shows. It was pointed out that they have a proper place at shows for the type of consultation that Dr. Craige mentions. Furthermore, I outlined a program which would enhance the veterinarian's usefulness to the exhibitors. If the veterinarian's presence now serves as restraint on the unscrupulous exhibitor, the same would hold true under the revised system.

Third, my report did not recommend a six-minute examination. It simply stated that at least this much time would have to be allotted each dog to do even a fairly adequate examination. Dr. Craige does seem to agree with me that diagnosis is difficult.

I am amazed at Dr. Craige's indication that he rubs dogs' throats and checks their membranes when examining them at shows. Most exhibitors object to the veterinarian's handling their dogs; comments in recent issues of dog magazines indicate a growing awareness of the danger of such handling by either the veterinarian or judge. It is obvious that there is inadequate time for the scrubbing of hands between each examination.

The comments of many veterinarians from different sections of the country, all, except this one, have been in agreement. The examinations as they are now conducted are a disgrace to the veterinary profession.

Sincerely,
s/Ralph C. Vierheller,
Whittier, Calif.

CONTENTS—Continued

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☐ can he digest it?

☐ will it keep him fit?

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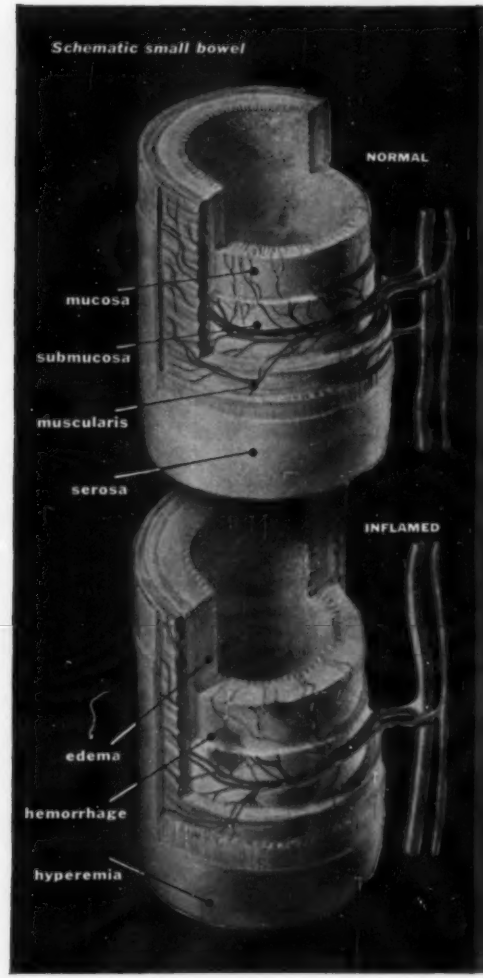

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News From Washington

Research Facilities.—The National Advisory Council on Health Research Facilities to the Public Health Service, meeting May 27-28, reviewed 148 applications for matching grants to aid in construction of medical research facilities (Public Law 835, 84th Congress). Ninety-eight applications, aggregating $26,152,968, were approved. Among the prospective recipients are **two schools of veterinary medicine.**

★ ★ ★ ★

Legislative Action.—H. R. 6548, doctor draft replacement bill (see JOURNAL June 15, 1957, adv. p. 18) passed the Senate June 12, 1957, and when signed by the President on June 27, 1957, became Public Law 85-62.

The Senate Committee on Appropriations did not recommend an increase in funds for meat inspection, when it considered the House-passed U.S.D.A. Appropriations Bill H.R. 7441 (see JOURNAL, June 15, 1957, adv. p. 18). During consideration of the bill in the Senate on June 11, an amendment was offered by Senator Humphrey (D., Minn.), on behalf of himself and Senators Symington (D., Mo.), Carroll (D., Colo.), and Morse (D., Ore.), providing for an increase of $1,732,000 for the Federal Meat Inspection Service. Following considerable debate (Congressional Record, June 11, 1957, No. 100), a modified amendment was agreed to which provides an increase of only $240,000 for meat inspection. It is believed the House conferees will agree to the modified amendment.

★ ★ ★ ★

New Bills Introduced.—H.R. 7841 (Rep. Fogarty (D., R.I.), to amend the Public Health Service Act relating to grants for construction of research facilities, etc., is similar to H.R. 6874, S. 1917, S. 1922 (see JOURNAL, June 15, 1957, adv. p. 18). S. 2304 (Sen. Humphrey, D., Minn.) amends Public Health Service Act to provide grants and scholarships for postgraduate education in the field of public health. Introducing H.R. 8152, Representative Andresen (R., Minn.) would authorize a special milk program, a veterans and Armed Forces dairy products program, and an accelerated brucellosis eradication program.

Representative Derounian (R., N.Y.) in H.R. 8196 would require Secretary of Agriculture to obtain consent of states (affected) before undertaking programs for the control and eradication of certain pests and plant diseases.

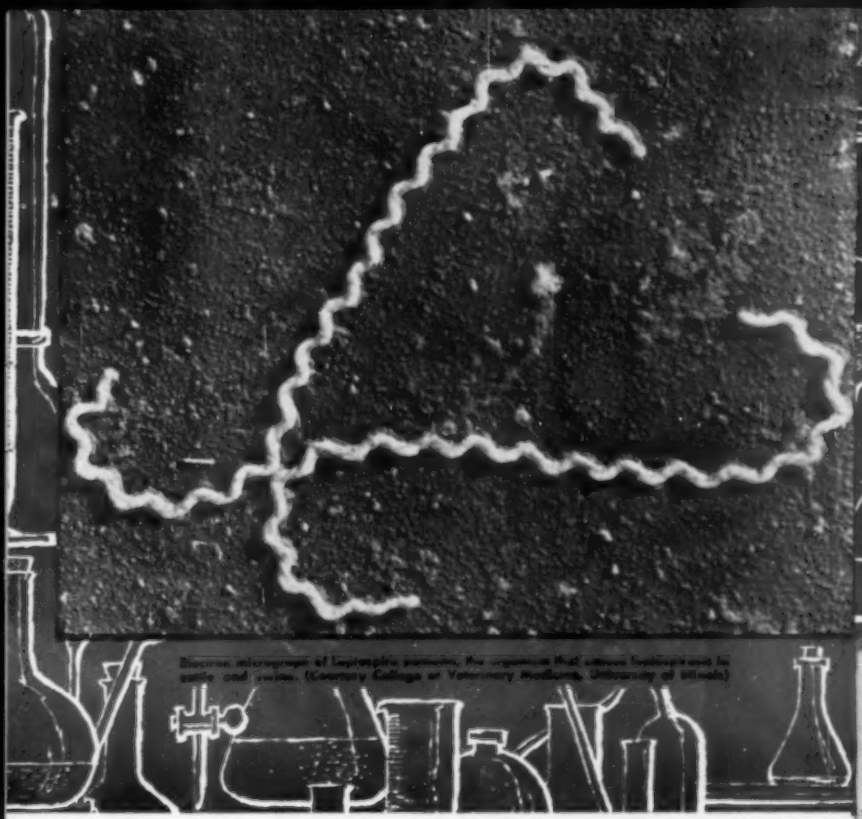
H.R. 8324, H.R. 8325, H.R. 8326, introduced respectively by Representative Abernethy (D., Miss.), Harvey (R., Ind.), Jennings (D., W. Va.), would create an agricultural research and industrial board.

In S. 2192, Senator Thye (R., Minn.) combines in one bill the principal features of two current senate bills (S. 673, previously introduced by Sen. Thye), and S. 1682 (see JOURNAL, April 15, 1957, adv. p. 12) to provide greater protection against communicable diseases of livestock and poultry, and adds ornithosis, rabies of livestock, and screwworms of animals to the list of diseases specified in the acts of February, 1903, May, 1884, August, 1890, and March, 1905.

In S. 2293, Senator Smith (R., N.J.), (by request) would create a federal advisory council of health in the executive office of the President to evaluate and advise on medical programs among the several departments and agencies of government, including Agricultural, Defense, Food and Drug Administration, Selective Service System, etc.

★ ★ ★ ★

Contracts in Health Sciences.—The Atomic Energy Commission has awarded 31 contracts for execution of research projects dealing with neoplasms and related problems, most being continuation awards. The largest went to Parke, Davis and Company; $30,000 for renewed support of studies in total body irradiation of animals. Recipients are universities, medical schools, institutes, and private industry.



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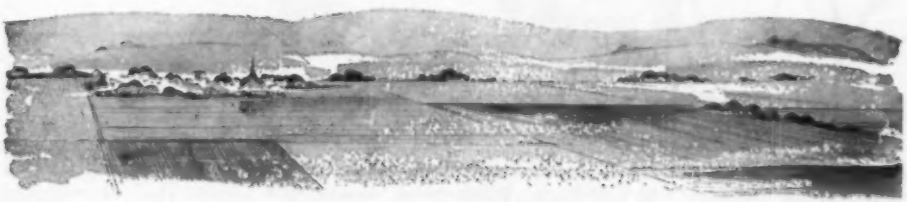

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- No pretreatment starving or purging necessary.
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- Easily administered in feed or drinking water, or by dose syringe, drench or stomach tube.
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- 85-100% effective against mature and immature large roundworms (Ascaris) and nodular worms (Oesophagostomum).
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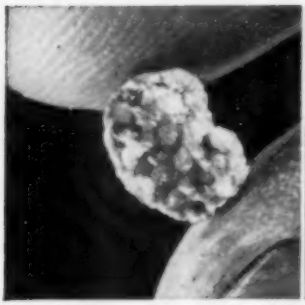
New Quick Ken-L-Meal mixes with liquid almost instantly and sends out strong "meat signals" dogs can't resist.



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Mixes twice as fast as almost every other brand. Because new Quick Ken-L-Meal is so quick and easy to fix, you cut in half the time and effort you normally would waste in stirring ordinary meal.

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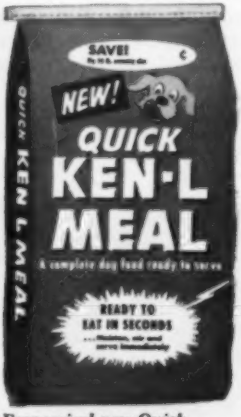

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Trikicide Powder is a highly effective bactericide and fungicide for the treatment of dermatoses in both cats and dogs. A "dry" medication, it is recommended for preventing and treating ringworm, moist eczema and other weeping skin lesions, and ear canker.

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Supplied: **Trikicide Powder**—Pkg. 12 x 1¼ oz. plastic spray bottles; 1 lb. hospital size.
Trikicide Solution—12 x 4 oz. plastic squeeze bottles; gallon bottles.

Other Haver/Lockhart products for the treatment of dermatoses in small animals.

FATONE POWDER AND CAPSULES
for the treatment of skin diseases due to fatty acid deficiency.

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parenteral for systemic treatment of protozoan infections and selected skin conditions.

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infected eyes and ears respond rapidly to

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brand of nitrofurazone

Wide-spectrum, non-irritating nitrofuran in formulations especially adapted for the treatment of bacterial infections of the

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"FURACIN in its water-soluble base is completely soluble in body fluids. These properties make it ideally suited for the treatment of ophthalmitis and postoperative therapy."*

FURACIN Soluble Powder Veterinary is conveniently applied directly from the plastic puff-bottle.

These FURACIN products contain FURACIN 0.2% in water-miscible vehicles. Therefore, they may be left in wounds to be sutured.

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This anhydrous, water-soluble dosage form of FURACIN affords prompt relief of otic infections in small animals.

In canine otitis externa, poor drainage, plus the trauma of scratching and rubbing, often frustrates therapy. It is noteworthy that "FURACIN has been used successfully in this condition . . ."*

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Available in dropper bottle of 1 fl.oz.

*Belloff, G. B.: Calif. Vet. 9:16 (Nov.-Dec.) 1955.

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DYNAFOS® dicalcium phosphate works harder nutritionally than any source containing "phantom" phosphorus

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This evidence has led to a re-evaluation of all feed phosphorus sources, including such old stand-bys as bone meal.

Dicalcium phosphates are chemically produced, which permits control of nutritional quality. These modern phosphates are consistently high in biological availability . . . low in fluorine content.

These advantages tell why many feed manufacturers now fortify feeds with di-calcium phosphate products like International's hard-working Dynamic Dynafos.

Get detailed data in this FREE BOOK

Get the facts about feed phosphorus sources in this FREE book. It reports the latest scientific developments in phosphorus nutrition, including research by leading colleges and experiment stations. Write: Technical Service, Feed Ingredients Department.

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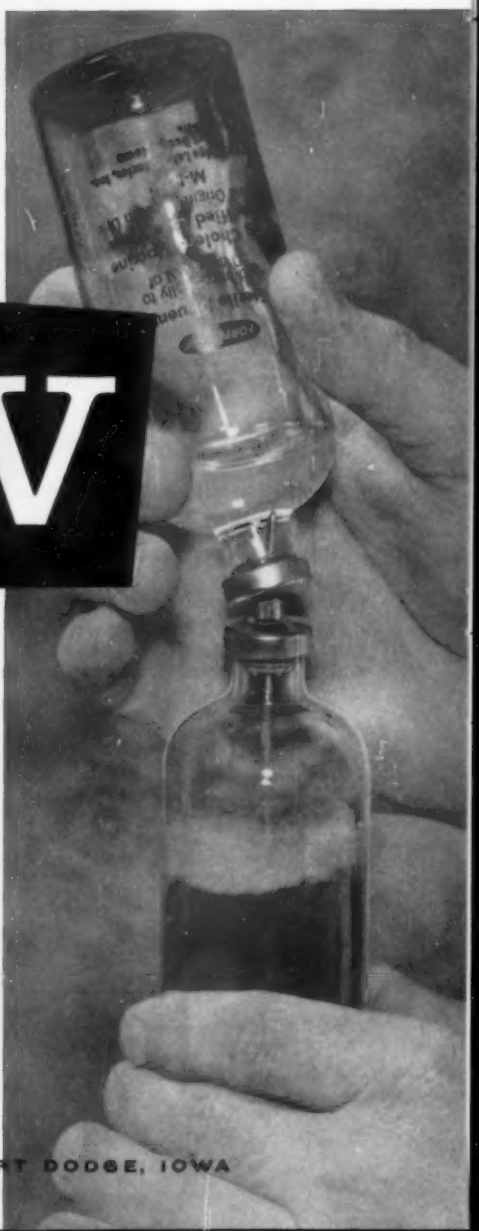

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Modified Live Virus Hog Cholera Vaccine

U.S. PATENT RE-23746

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FORT DODGE LABORATORIES, INC. / FORT DODGE, IOWA

JOURNAL
of the American Veterinary Medical Association
Established January, 1877 Chicago 5, Illinois
Vol. 131 JULY 15, 1957 No. 2

Observations on Radiodermatitis in Horses

F. J. MILNE, D.V.M., M.R.C.V.S.
Guelph, Ontario

AN IMPORTED Irish Hunter suffering from a large diffuse wart (6 by 4½ by ¾ cm.) was admitted to the clinic with a request for x-ray therapy since surgical removal and the administration of a course of wart vaccine had been without effect. The animal was subjected to two doses of radiotherapy (430 r and 946 r) given four days apart. Two months later, there was no apparent improvement, so radon implantation was carried out. This case prompted the following experiment.

At that time, little information was available in the literature on how much radiation a horse could tolerate without apparent adverse effect. Radiotherapy had been employed[1] for inflammatory conditions of the limbs of horses, using a dose of 120 r (measured in air). When a total of 480 to 720 r was given in one or two treatments per week, no adverse effects were reported. It had been recommended[2] that, in treating inflammatory conditions in horses, total doses of over 1,000 r should be avoided.

A single irradiation with 1,800 r had produced a suberythematous effect after 20 days and on the forty-sixth day there was an erythematous dermatitis (second degree reaction), followed by a partial loss of hair.[3] With medium-hard ray irradiation of 2,400 r, the same cutaneous lesions were produced after 64 days. A "tolerance dose" of 1,800 r of hard rays was not considered to cause any pathological effects on hair-covered, healthy skin, except for a temporary depigmentation of the pigmented hair, while a single irradiation with 2,400 r of hard rays produced a first-degree reaction after 18 days, a second-degree reaction after 24 days, and a painful third-degree reaction after 71 days. A single irradiation with 2,700 r and 3,000 r of hard rays caused a first-degree reaction after 14 days, a second-degree reaction after 18 days, a third-degree reaction after 44 days and, after 63 days, a gangrenous dermatitis (necrosis of skin).[3]

Although it was appreciated that the reaction in pathological tissue is markedly different from that in normal skin (where mitosis is active the lesion is correspondingly and proportionately more sensitive), an attempt was made to determine a safe skin dose which could be given "at one sitting." Fractionated doses are logical under most circumstances but, where the lesion to be treated involves the trunk, it is probably more advisable to give the animal a single dose under anesthesia to minimize the danger to the operator and apparatus if the animal becomes uncooperative in the standing position. The risks of repeated administration of our presently available anesthetic agents within a short period are well known.

EXPERIMENTAL PROCEDURE

Two horses were obtained for this study, one a 3-year-old chestnut gelding, weighing approximately 1,100 lb., of decidedly phlegmatic temperament (exper. 1), and the other a 5-year-old chestnut mare, weighing about 1,200 lb., of uncertain temperament (exper. 2).

The apparatus available for this project was a Profexray Tx-2 unit emitting 354 r.p.m. (measured in air) and operating at 90 kv. and 5 ma. through a filter of 0.5 Al

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The author thanks Dr. A. E. Broome and Mr. E. Bishop of the Radiology Division, without whose help these observations could not have been made; and Dr. H. J. Neely and Mr. T. B. Gellatly for the photographs.

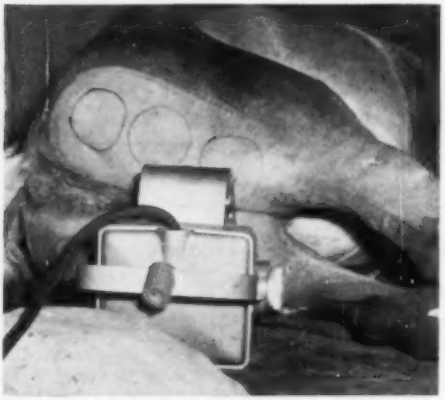

Fig. 1—Anesthetized horse with the cone of the x-ray unit in contact with the skin to be irradiated.

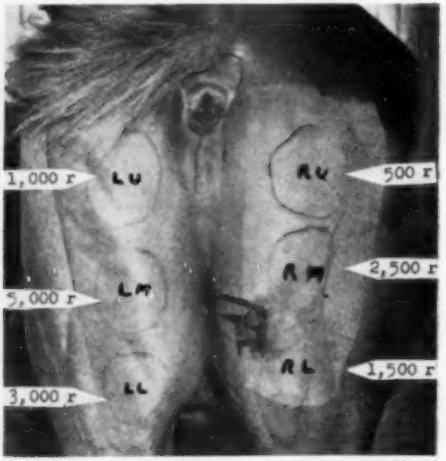

Fig. 2—The areas of the horse to be irradiated and the amount of roentgens (free in air) to be delivered to each area are shown. The dark area between the RM and RL zones is the place from which the skin biopsy was taken.

at 10 cm. F.S.D. The apparatus was placed so that the cone was in contact with the skin of the horse (fig. 1). The hair on the right side was clipped.

The regions to be irradiated and the amount to be administered to each area are shown (fig. 2). The areas are designated as follows: LU, left upper; LM, left middle; LL, left lower; RU, right upper; RM, right middle; and RL, right lower. The number of roentgens (measured in air) delivered to each area was: LU, 1,000 r; LM, 5,000 r; LL, 3,000 r; RU, 500 r; RM,

Fig. 3—The left hindleg of the horse showing lesions on LM and LL sites 19 days after irradiation (left); lesions on horse 39 days after irradiation (right).

Fig. 4—The lesions on the horse 56 days (left) and 82 days (right) after irradiation.

2,500 r; and RL, 1,500 r. Since the field was a circular area 10 cm. in diameter, the actual skin dose was probably 18 to 22 per cent higher than the number of roentgens mentioned above since these were "free-in-air" figures. After an intravenous administration of 7 per cent chloral hydrate solution, which produced a stage of light-medium narcosis, each horse was placed in lateral recumbency on the operating table, and a stage of light anesthesia was maintained. The gelding (exper. 1) was on the table for two hours and 50

Fig. 5—The lesions on the horse 155 days after irradiation.

Fig. 6—The horse 504 days after irradiation.

minutes; the mare (exper. 2) for two hours and five minutes, during which time all six areas on each horse were irradiated.

For almost 17 months, the changes made by irradiation were observed, and both color and black-and-white photographs were taken in order to depict the various lesions more graphically (fig. 3-6).

No attempt was made to treat the areas after exposure to the rays. The horses were kept in tie-stalls during inclement weather and pastured in a large paddock at other times. Although flies were attracted to wounds on other animals in the hospital, at no time were they seen to stay on the irradiated zones. Myiasis was not encountered at any time, not even when necrotic tissues were sloughing, nor was there any evidence of irritation or pain. While the horses were in the pasture, they were at no time seen to rub the lesions against the bars and posts of the enclosure. Their appetites remained good throughout the project.

At one time, there was a decided loss of condition, from good to fairly poor. This may not be significant because 4 other horses kept under identical conditions also showed loss of body condition, and these along with the 2 experimental subjects were found, on fecal examination, to be heavily infested with intestinal helminths, probably due to pasture infection. Improvement in general condition followed anthelminthic therapy and increased rations.

On day 61, the gelding showed edema in the hindlegs. On day 68, the edema had spread along the belly wall almost to the forelegs, and the horse dragged the left hindleg noticeably when forced to walk. By day 77, there was no trace of the edema, and the horse was sound when walking and trotting. The mare showed a similar phenomenon; the edema, which was largely confined to the hindlegs and the region of the escutcheon, was first noticed on day 53. The edematous swellings caused more pain on palpation than did the x-ray burns. When the mare was confined in a box stall, the condition resolved within ten days. The reason for this edematous condition was not apparent.

In man, the usual variety of radiodermatitis may be divided into two types—acute and chronic.[4] The acute type is subdivided into three degrees as follows:

The first degree consists of a simple cutaneous erythema or hyperemia. The reaction becomes manifest, as a rule, in five to seven days, reaches a maximum in ten to 14 days, and disappears usually in the third or fourth week. Subjectively, there is a sensation of burning, tingling or, perhaps, itching. Some desquamation is likely during the stage of involution; in hairy regions, depilation is apt to occur during the third week; alopecia may be temporary or permanent.

In the second degree, the reaction has progressed beyond hyperemia and slight edema. It is recognized by edema, vesiculation, and erosion or superficial ulceration. Subjectively, there is a tingling and burning sensation, followed by a burning pain. In ten to 14 days, the intense cutaneous edema will destroy all or part of the epidermis with a consequent moist or exudative, eroded surface that may or may not be preceded by vesicle formation, and the exudate will dry into a crust. In three weeks, the hair will fall from the irradiated area. Complete regeneration occurs and, if extensive damage has not been done to the connective tissue and sequelae do not develop, clinically normal skin is the final result.

In the third degree, ulceration or necrosis involves the true skin. There is exfoliation of the epidermis, leaving a denuded derma. Subjectively, there is excruciating pain of a burning character, and the injured cutis and subcutaneous tissue may undergo rapid ulceration, or the affected parts may form a dry, hard, necrosed mass with a crusted surface, *i.e.*, dry gangrene (called fourth degree by some authorities). In the latter case, the necrosed mass, surrounded by a zone of intense inflammation, will remain apparently stationary for weeks or months, eventually being converted into a slough that is finally thrown off, leaving a deep, indolent type of ulcer with a dry, glistening floor.

Keloids (hypertrophic scars) are uncommon sequelae although the development of keratoses is fairly common after a third-degree reaction. These keratoses may develop a few months after the healing of a severe reaction, but as a rule it is several years before they make their appearance.

RESULTS

The first change observed in the mare (exper. 2) was on day 17 and in the gelding (exper. 1) on day 20 when edematous plaques were evident on the LM, LL, RM, and RL areas (the zones of greatest irradiation). When the observations above are compared with those recorded in man,[4] the aforementioned four zones could be classified as of the third degree, while the LU and RU zones would be in the first-degree category since neither went beyond the stage of slight edema. Vesiculation was not seen at any time, and the abrupt margins and punched-out appearance of the ulcer floor which occurred in the lesion in man were not observed. The depigmented area lateral to the irradiated zone

TABLE I—Changes Observed on Irradiated Areas of the Mare

Day	Area	Remarks
17	LU	.....
	LM	Skin loss at 7 o'clock position.
	LL	Edematous plaque.
	RU	.....
	RM	Raised edematous plaque.
	RL	Raised edematous plaque.
19	.....	See figure 3.
22	LU	.....
	LM	Complete skin loss.
	LL	Skin separating at 7 o'clock position.
	RU	.....
	RM	Edematous Plaque.
	RL	Edematous Plaque.
32	LU	? commencing depigmentation.
	LM	Skin loss complete — dry.
	LL	Erosion of surface.
	RU	.....
	RM	Dry eroded surface.
	RL	Edematous plaque.
39	LU	? depigmentation, hair present.
	LM	Dry and crusty.
(Fig. 3)	LL	Dry and crusty.
	RU	? plaque forming, no hair growth.
	RM	Crust formation.
	RL	Plaque, ? skin cracking in sagittal line.
47	LU	Depigmentation especially at periphery.
	LM	Dry and crusty.
	LL	Crusts have been cast off, surface smooth.
	RU	Plaque.
	RM	Crusts present except for smooth dry center.
	RL	Crack in skin now evident.
56	LU	As before.
	LM	Crusts, depigmented are a lateral to lesion.
(Fig. 4)	LL	Crust formation.
	RU	Plaque.
	RM	Smooth surface, crust on medial third.
	RL	Depigmented center, crust at 2 o'clock position.
62	LU	As before.
	LM	Deep thick scab commencing to separate.
	LL	As before.
	RU	As before.
	RM	As before.
	RL	As before.
69	LU	As before.
	LM	As before.
	LL	Separation of scab nearly complete.
	RU	As before.
	RM	As before.
	RL	As before.
76	LU	Obvious depigmentation.
	LM	Crust still deeply attached.
	LL	Depigmented area around periphery.
	RU	Plaque regressing.
	RM	Crust sloughed, surface smooth.
	RL	Depigmented center, dry surface.
82	LU	As before.
	LM	Necrotic area still attached.
(Fig. 4)	LL	Commencing to slough.
	RU	As before.
	RM	Covered with coagulated exudation.
	RL	Smooth surface, granulating.
89	LU	As before.
	LM	Slough partly separated.
	LL	Slough partly separated.
	RU	Small depigmented central area.
	RM	Smooth granulations on left and coagulated exudation on right.
	RL	Smooth and granulating.
102	.....	Little change in all areas except for epithelialization commencing at periphery of the four lower lesions.
111	LU	As before.
	LM	Smoothly granular, increased peripheral epithelialization.
	LL	Smoothly granular, increased peripheral epithelialization.
	RU	Depigmented area less in size.
	RM	Smoothly granular, increased peripheral epithelialization.
	RL	Smoothly granular, increased peripheral epithelialization.
134	.....	No change in any area.
155 (Fig. 5)	.....	All four lower lesions show shrinkage of granulating areas and increased peripheral epithelialization, especially LL and RL.
210	.....	White peripheral areas becoming cornified on surface (? keratosis).
321	LU	White depigmented zone, normal center.
	LM	Increase of cornified epithelial tissue at expense of granulation tissue.
	LL	As for LM.
	RU	Normal skin.
	RM	Very small granulating center.
	RL	Cornified epithelialization complete.
376	LU	As before.
	LM	Cornification general except for small granulation tissue center.
	LL	As for LM.
	RU	Normal skin.
	RM	Cornification of lesion complete.
	RL	Cornification of lesion complete.
396	.....	Cornified epithelialization complete on all four lower lesions.
504 (Fig. 6)	.....	Very little change since 396 days.

LM, which was observed on day 56 (fig. 4), presumably was due to a leak from the anode.

For purposes of brevity, the changes observed have been concisely tabulated (table 1), but it should be appreciated that many more inspections were made than indicated. Since the mare showed a slightly more severe reaction, judging by the amount of tissue slough, than did the gelding, only the observations recorded on her are tabulated.

CONCLUSIONS

It would appear from this limited study that a dose of 500 r (measured in air) is the maximum to be given at one time on shaved skin. In the case of unshaved skin, a dose of 1,000 r will most certainly give rise to depigmentation which will last for

several months, if not permanently. However, the difference in sensitivity of the skin of various parts of the body still has to be determined for it is known that thinner skins will react to smaller doses and, in addition, the presence of pigment exerts a protective influence. Accordingly, the conclusions reached above should be applied only to horses of light chestnut color whose skin area to be irradiated is the same thickness as the skin of the buttock region.

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The Capacity of Certain Common Laboratory Animals to Sweat

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Although the existence of "sweat glands" in the hairy skin of certain animal species is mentioned in the literature, references to animals capable of sweating are generally incomplete and, in some instances, contradictory.

Tubular skin glands have been demonstrated in skin sections prepared from the dog, horse, ox, gorilla, and pig.[1-5] At these laboratories, we have seen tubular skin glands in the skins of the goat and monkey. While man and primates are endowed with apocrine in addition to the merocrine type of glands found all over the surface of the body, the tubular skin glands of domestic animals are almost entirely of the apocrine type.

The sensitivity of the starch-iodine test for sweating[7] was improved[8] by painting the skin with 2 per cent iodine in absolute alcohol, then brushing on a 1:1 mixture of soluble starch in castor oil. The latter mixture retards the rate of evaporation of sweat and permits better contact between starch, iodine, and sweat. As with the original test, individual gland activity is visualized by the formation of black spots at the pores. This technique was used[8] to demonstrate a sweating response in the hairy skin of dogs.

Using the modification, we tested the capacity of ten animal species and of man to sweat on four of the hairy areas of skin and on the palms or foot pads. The sweat stimulus was provided by total body exposure to warm temperature in a "hot room," with temperature controls affording 100 F., 70 per cent relative humidity; and by intradermal injection of 0.05 to 0.2 ml. of pilocarpine (1:500) during exposure to a cool environment (65 F., 10 per cent relative humidity).

Results involving about six of each test species are given (table 1). Besides man, the horse, monkey, dog, burro, pig, and goat sweat on the body surface in response to heat. Response time (as judged by a positive starch-iodine test), varying from seconds in the horse to about 20 minutes or longer in the goat, was in the order cited.

The more rapid sweating response of the horse to heat (20 to 30 sec.) than that reported for intravenously injected adrenaline (2 to 3 min.)[9] could be interpreted as indicating a sweating mechanism other than one which depends on the epinephrine level of the circulating blood as suggested.[9,10] On the other hand, this difference in response time may merely be due to the more sensitive technique of measuring sweating response employed in the present studies.

Experiments at these laboratories have also shown that local irradiation of the skin of the horse by an infrared lamp resulted in local but not general sweating. This too might appear to reflect a mechanism other than that suggested.[9]

Under experimental conditions involving total body exposure to heat, visual observation for a five-minute period suggested that the horse and burro may have had a greater output of sweat in addition to a larger number of active sweat glands per unit area than man who, in turn, was better supplied with sweat glands than the monkey and dog. The sweat output of goats and swine was quite small.

Painting the entire ventral surface of swine with the starch-iodine color indicators revealed a sweating response only

From the Chemical Warfare Laboratories, Army Chemical Center, Md.

TABLE I—Comparison of Man and Other Animals in Regard to the Ability to Sweat Following Heat Exposure (H) or Intradermal Injection of Pilocarpine (P) on Various Areas of the Body

	Skin sites tested and active glands per cmm.									
	Medial femoral		Abdominal		Ventral thoracic		Dorsal thoracic		Palms* or foot pads	
Species	P	H	P	H	P	H	P	H	P	H
Man	.....	90-110	.....	250-270	.....	100-120	.....	150-175	.....	280-320
Rhesus monkey	16-29	46-55	4-12	20-25	6-27	25-30	9-24	40-42	10-80	80-120
Mongrel dog	15-20	30-48	9-30	30-45	10-32	60-65	5-10	45-50	0	10-50
Horse	.....	.....	.....	.....	.....	.....	.....	> 1000	.....	.....
Milk goat	0	80-130	0	80-100	0	110-144	0	50-120	0**	0**
Chester White swine†	0	0	0	6-11	0	6-9	0	10-20	0**	0**
Domestic cat	0	0	0	0	0	0	0	0	200-400	400-450
Guinea pig	0	0	0	0	0	0	0	0	0	0
New Zealand Albino rabbit	0	0	0	0	0	0	0	0	0	0
Burro	.....	> 500	.....	> 500	.....	> 500	30-50	> 500	.....	.....
Wistar white Rat	0	0	0	0	0	0	0	0	0	35-52

*Hypothenar prominence. **Bulb of heel; †Additional responses to heat were observed as follows: inguinal 6-10, perineal 14-30, axillary 12-30, superior femoral 10-15.

in those areas which in man are well supplied with apocrine glands, namely, the axilla, abdominal midline, perineum, and perianal areas. Apocrine-type glands alone were seen in histological sections prepared from these skin areas.

The cat, guinea pig, rabbit, and rat did not sweat in the hairy skin. Of those animals tested which sweat on hairy skin areas in response to heat, the goat and pig showed no response to pilocarpine.

Active sweat glands were observed on the palms of the monkey and the foot pads of the dog, cat, and rat. Those of the rat and dog were activated by heat but not pilocarpine.

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Hog Deaths from Overheating.—The percentage of losses in swine from overheating during shipment is greater in the spring than in summer. The five-year average at one major market was (per 1,000): April, 1.44; May, 1.35; June, 1.65; July, 1.2; August, 0.96; and September, 0.76. Undoubtedly animals develop a tolerance for heat but apparently shippers also make better provisions for keeping hogs cool in hot weather.—*Livestock Conservation, Inc.*

Rate of Machine Milking in Cows.—The rate of milking was measured on 286 cows of four dairy breeds, over a four-year period at Cornell University, in the early, middle, and late stages of lactation. Including stripping time (av. 1.5 lb. in 37 sec.), both the rate and total time of milking gradually decreased from an average of 4.5 minutes in the early stage to 2.8 minutes in the late stage of lactation.

The rate of milking seemed to be an inherited characteristic. Jerseys averaged the shortest milking time (3.6 min.); and

Holstein-Friesians had the fastest maximum rate of flow (7.2 lb./min.). Total milking time varied from 1.25 to 11.66 minutes and the maximum rate of flow from 1.3 to 14.0 lb. per minute. At mid-lactation, 36 per cent were milked in less than three minutes; 38 per cent in three to four minutes; 17 per cent in four to five minutes; and 9 per cent required over five minutes.—*J. Dai. Sci. (March, 1957): 258.*

Livestock Auction Sales.—Of the estimated 2,400 livestock auctions in the United States, more than 500 are now subject to the Packers and Stockyards Act, administered by the Agricultural Marketing Service, U.S.D.A., to assure the producers of open, competitive markets. About as many cattle, calves, sheep, and lambs, and about two thirds as many hogs, are now sold through auctions as are sold at terminal markets. These auctions are most numerous in the states from Iowa and Nebraska, south into Texas.—*Agric. Marketing (May, 1957): 6.*

Progress in Hog Cholera Eradication

According to a survey conducted by the ARS, U.S.D.A., 14 states have outlawed sales of virulent hog cholera virus for vaccination: Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, South Carolina, and Tennessee in the south and southeast; Illinois and Wisconsin in the "corn and hog belt"; and Montana, New Mexico, North Dakota, and Utah.

A similar bill has been introduced in Connecticut. In addition, Florida and Oklahoma already have authority to discontinue the use of virulent viruses. Thus, a third of the states have taken independent action, and others still may, before the proposed national ban (H.R. 5933) takes effect on Jan. 1, 1958.

The estimates indicate that, of all pigs vaccinated in 1956, no virulent virus was used in ten states, less than 10 per cent in seven other states, and only in New York and West Virginia was virulent virus used on more than half the pigs vaccinated.

In the eight-month period ending March 1, 1957, as compared with the previous similar period, the sale of modified live virus for use with serum increased 16 per cent, sales of modified live virus vaccine for use without serum increased 5.3 per cent, while the sale of other agents decreased as follows: virulent virus, 31 per cent; inactivated virus vaccines, 4.5 per cent, and anti-hog cholera serum, 10 per cent.

Hog Cholera Notes from Germany*

Leukopenia, a Sign of Hog Cholera.—Of 17 pigs artificially infected with hog cholera virus, the leukocyte count, when clinical signs appeared, was below 8,000 in 15, and below 10,000 in all.—*Berl. Meunch. tierärztl. Wchnschr., 69, (1956): 145.*

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Crystal Violet Vaccine.—In two years, 25,000 liters of crystal violet hog cholera vaccine were produced at one plant, using 18,000 virus-donor pigs. The safety and potency of each lot was tested on 10 pigs—9 given 5 cc., repeated in 14 days, and 1 given a single injection of 10 cc. All were subjected to contact infection 21 days after the last vaccination, while 3 of the 10 were also given 1 cc. of virulent virus. Of the nearly 500 pigs tested, 87.9 per cent showed no reaction, 10.9 per cent showed a rise in temperature, and 1.2 per cent died of hog cholera.—*Arch. Exptl. Vet-med., 9, (1955): 618.*

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Cholera Virus Multiplies in Young Mice.—Mice 4 to 10 days old were inoculated intraperitoneally with hog cholera virus and killed after 24 hours for serial inoculation. By the fifty-seventh passage, no reaction had been observed in the young mice but the test pigs injected with the mouse material at each passage all died.—*Arch. Exptl. Vet.-med., 9, (1955): 732.*

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Cholera Diagnosed During Incubation.—Necropsy of 45 apparently healthy young pigs (only 1 with a temperature over 104 F.) from a cholera-infected herd revealed histological changes, especially in the central nervous system, in 17 of 24 examined. It also revealed differences in the *alpha*-2 and *gamma* fractions, on electrophoretic tests of the serum, in most of the 45 pigs. Some leukopenia was observed. This indicates that detectable histopathological and biochemical changes occur in swine during the incubation period of hog cholera.—*Deutsch. Tierärztl. Wchnschr., 63, (1956): 273.*

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*Taken from the German Science Bulletin, 2, 1956.

Eversion of the Lateral Ventricles of the Larynx in Dogs—Five Cases

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Respiratory tract distress in dogs of the brachycephalic type may result from one of several or a combination of causes. These include stenosis of the nares, hypertrophy of the soft palate, hypertrophic tonsils, and eversion of the lateral ventricles of the larynx. This is a report of 5 cases complicated by eversion of the lateral ventricles of the larynx (fig. 1), 3 of which were aided by surgical intervention.

Case Reports

Case 1.—In July, 1954, a male English Bulldog, 4 years old, had experienced respiratory distress for one year. During this time, the dog had undergone amputation of the soft palate which afforded only partial relief. When again presented for treatment, the dog was anesthetized and on examination of the pharynx and larynx revealed severe edema and everted lateral ventricles which almost occluded the larynx. An endotracheal tube was inserted to produce a free airway but, in spite of this, the dog died in a half hour. At necropsy, both lateral ventricles were found to be everted (fig. 2).

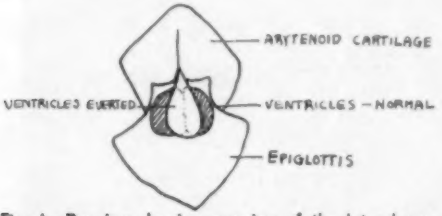

Fig. 1—Drawing showing eversion of the lateral ventricles of the larynx in dogs.

Fig. 2—Larynx and trachea of dog exposed to show everted ventricles.

Case 2.—In August, 1955, a male English Bulldog, 6 years old, became cyanotic when excited. During the last two days of life, the dog would collapse following the slightest physical exertion; death occurred during an attack. At necropsy, it was found that the air passages were obstructed as the result of swelling of the epiglottis, pharynx, and eversion of the lateral ventricles of the larynx. The lungs were edematous and hyperemic.

Case 3.—In September, 1956, a female English Bulldog, 10 months old, had chronic dyspnea and a cough. External palpation of the larynx produced pain. The dog was anesthetized and examination of the larynx revealed partial bilateral eversion of the lateral ventricles. An endotracheal tube was inserted and the ventricles were removed by use of an electric "hyfrecator." As the dog recovered from surgery, all signs of dyspnea disappeared.

Case 4.—In October, 1956, a female Boxer, 2 years old, was afflicted with chronic gagging and expectoration of phlegm. When the dog was anesthetized, bilateral, partial eversion of the lateral ventricles was evident. These were amputated by use of a wire tonsil snare. Surgery was accompanied by a minimum of hemorrhage. Coughing and gagging disappeared following surgery.

Case 5.—In January, 1957, a female English Bulldog, 3 years old, was unthrifty, showing stenosis of the lateral wings of the nares, and had extreme dyspnea on inspiration. The dog was anesthetized and the lateral nares were corrected surgically.[1] The left lateral ventricle, which was found to be everted a distance of 1.5 cm., was removed with a

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tonsil snare. There was marked respiratory relief.

CONCLUSION

While the elongated soft palate and stenosis of the nares has been recognized as a source of respiratory dyspnea, it is probable that the eversion of the lateral ventricles has been overlooked as a factor in some past cases. It is believed that some stress (such as elongated soft palate, chronic bronchitis, or trauma from the use of an endotracheal tube) is a factor in exciting this condition. Correction can be accomplished by removing the everted ventricles.

ADDENDUM

Within two months after this report was submitted, the author encountered 5 additional cases, 2 in Pugs, and 3 in Bulldogs. In all cases, the everted lateral ventricles were excised with a tonsil snare and the dogs recovered satisfactorily.

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Subconjunctival Ablation of the Eyeball of Pet Animals

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Enucleation of the eyeball is frequently necessary in the practice of small animal medicine. More conventional procedures for ablation of the eye often terminate unsatisfactorily because they leave a sunken socket.

The object of subconjunctival ablation is to leave the conjunctiva intact to form a partition directly behind the sutured lids to aid in preventing a sunken socket.[1]

OPERATIVE PROCEDURE

Except in an emergency, the conjunctival sac is cleaned and an antibiotic ophthalmic ointment is instilled. Before sur-

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[1]Thorek, Phillip M.: Anatomy in Surgery. J. B. Lippincott, Philadelphia, Pa. (1951): 89.

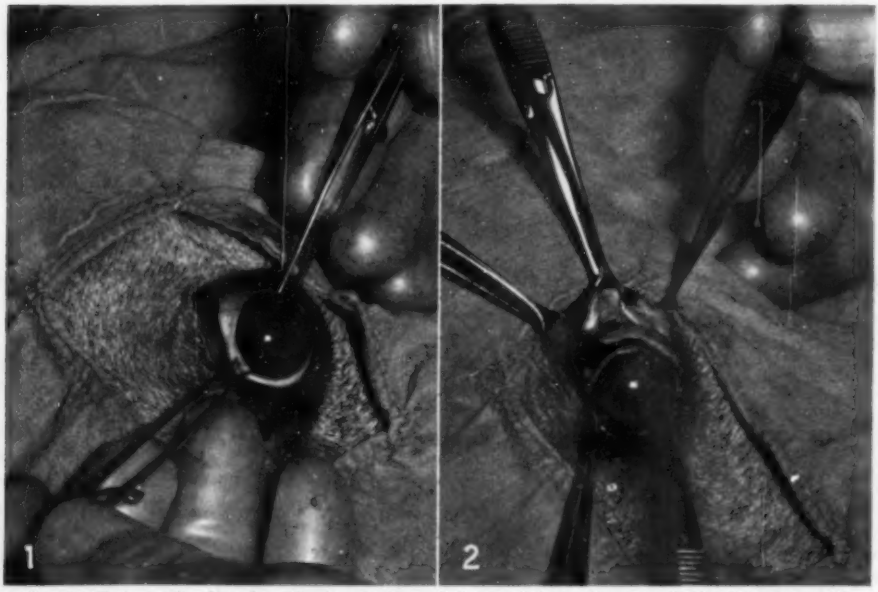

Fig. 1—Photograph of a dog showing fixation of the eyeball at the corneal-scleral junction with Graefe's fixation forceps.

Fig. 2—Photograph of the dog showing reflection of the conjunctiva, beginning the incision at the limbus.

Fig. 3—Photograph of the dog showing intact conjunctiva following removal of the eyeball.
Fig. 4—Photograph showing closure of the dog's lid margins following ablation of the eyeball.

gery, the operative area is shaved, scrubbed, defatted with ether, and swabbed with an antiseptic.

The lids are retracted with a speculum and the eyeball is grasped on opposite sides with two pairs of forceps (fig. 1).

The tissues are then reflected from the sclera (fig. 2) and the ocular muscles severed at their scleral attachment.

When the optic nerve and accompanying vessels are exposed, they are severed with a tonsil snare which is passed over the globe.

Fig. 5—Photograph of the dog showing bandage over the wound area following ablation.

The eyeball is removed (fig. 3) and the edges of the conjunctiva are lightly drawn together with either a purse-string or interrupted Lembert suture of absorbable material. The conjunctival stump thus serves to support the eyelids.

The nictitating membrane and its glands are then extirpated and the resulting margins of the conjunctiva are sutured to close the pocket left at the medial canthus.

About ¼ inch of the margins of the lids are then removed and the edges are apposed by interrupted sutures of 3-0 silk (fig. 4). The area over the wound is then bandaged (fig. 5).

Chelating Agent Affects Fetuses.—The chelating agent, ethylenediamine tetraacetic acid, disturbed fetal development when given to pregnant rats; 9 per cent of the offspring born alive had polydactylism (supernumerary toes), double tails, or general or local edema.—*Vet. Bull., Item 620 (Feb., 1957): 97.*

Of 151 cows bred after cesarotomy, 78 per cent conceived, compared with 88 per cent conception in similar cows after normal parturition.—*Vet. Bull. (April, 1957): Item 1300.*

Chlorpromazine Hydrochloride for the Examination of the Penis in Bulls

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Chlorpromazine hydrochloride* has been used experimentally in horses.[1] We have used it clinically on 19 stallions, and on several vicious or aggressive bulls to quiet the animals for examination, or as an aid in their restraint for surgery. The dose, used intravenously, has been approximately 0.1 mg. per pound of body weight for stallions and 0.2 to 0.3 mg. per pound for bulls.

In both the equine and bovine species, the tranquilizing effects have been satisfactory. In stallions, the penis was observed to relax and to protrude from the preputial opening within five minutes after intravenous injection of the drug. This suggested its use in the bull to facilitate examination and withdrawal of the penis.

The advantages of using this drug as an aid in such examinations are: (1) it is a simple technique; (2) it seems more certain in its action than an epidural nerve block, or the relatively difficult pudendal nerve block; and (3) of practical importance, the animal becomes more tractable following its use and is less liable to become excited or aggressive.

CASE REPORTS

Case 1.—A 900-lb. Polled Hereford bull, 2 years old, was examined on April 24, 1957. The bull's penis was crooked, and when erected it was deflected at such an angle that the bull could not copulate successfully. The bull was not aggressive, but resented manipulation of the penis and sheath, and the penis could not be forced out of the sheath by digital manipulation. Therefore, 180 mg. of chlorpromazine hydrochloride was injected into the jugular vein and, within five minutes, the bull appeared drowsy, but could easily be aroused. Within ten minutes, the result was relaxation sufficient to allow the prepuce to prolapse approximately 3 inches, and the tip of the penis could be seen emerging. The bull would lie down if left alone, but could be made to stand with little urging. The penis was withdrawn from the prepuce to its full length, straightening out the sigmoid flexure by grasping its end with a piece of gauze held in the fingers. The bull did not object to this procedure, nor did it exert much pull in attempting to withdraw the penis into the sheath. The penis remained extended for approximately three minutes, then was slowly drawn back into the sheath. The animal remained rather depressed for six hours after administration of the chlorpromazine hydrochloride.

Case 2.—A 2,000-lb. Shorthorn bull, 5 years old, was examined on April 22, 1957. The owner stated that the animal was unable to protrude its penis out of the sheath. The bull was restrained in lateral recumbency on an operating table, and a pudendal nerve block was performed, using 20 cc. of 2 per cent procaine on each side; also, 5 cc. of a 1 per cent solution of hexylcaine hydrochloride was injected epidurally. These procedures did not provide sufficient relaxation or paralysis of the retractor muscles of the penis to allow the penis to be withdrawn from the sheath, even with the use of a Knowles' uterine forceps gripping the end of the penis. The animal exhibited considerable evidence of pain and discomfort during this procedure, and struggled violently. Four days later, the animal was placed in a stocks and 250 mg. of chlorpromazine hydrochloride was injected into the jugular vein. Within five minutes, the retractor penis muscles had relaxed enough so that the penis could be withdrawn from the sheath by grasping the end with a piece of gauze held in the fingers. The bull remained quiet during this procedure, appearing somewhat depressed, and did not show any evidence of pain as the penis was manipulated. The penis was not retracted for several minutes after being released. The animal remained slightly depressed for approximately six hours.

DISCUSSION

Chlorpromazine hydrochloride was administered to 2 bulls at the approximate rates of 0.2 mg. and 0.125 mg. per pound

Dr. Lundvall is associate professor of veterinary medicine and surgery, Iowa State College, Ames; Dr. Campbell was a senior student of veterinary medicine at Iowa State College when this study was made.

*The Thorazine used in this study was supplied by the Pitman-Moore Co.

[1]Martin, J. E., and Beck, J. D.: Some Effects of Chlorpromazine Hydrochloride in Horses. Am. J. Vet. Res., 17, (1956): 678-686.

of body weight, respectively. In both instances, the penis relaxed sufficiently so that it could be manually withdrawn with comparative ease. The animals did not resent the manipulations, nor was there any evidence of pain during the procedure. The effects of the intravenous injections were evident within five minutes, both bulls becoming docile and, shortly thereafter, somewhat depressed. The depression lasted for approximately six hours. The same effects have been observed in stallions, using a dose of approximately 0.1 mg. (i.v.) of the drug per pound of body weight.

Fibromas Cause Tympany in a Cow.—An exploratory rumenotomy on an Ayrshire cow that had been showing tympany for three weeks, and had quit milking, revealed a small group of pedunculated fibromas above the esophageal groove which appeared to act as a valve, thus preventing eructation of gasses. The fibromas were removed with a small, sterilized emasculatome applied to the stems. After completion of the operation, tympany did not recur. A laboratory reported that these were simple fibromas covered with keratinized epithelium which, on culture, yielded a profuse growth of *Aspergillus fumigatus.*—*J. A. Benson in Vet. Rec. (April 6, 1957): 412.*

Ovine Listerial Abortion.—In a flock of 180 Marino ewes in Australia, 30 (16%) apparently healthy ewes aborted and each retained the fetal membrane for two or three days. A few ewes showed a slight depression but there was no vaginal discharge and no gross pathological changes in the lambs or fetal membranes. *Listeria monocytogenes* was recovered in pure culture from the stomach and blood of 1 fetus. There were no postnatal deaths in lambs attributable to the disease.—*P. T. Diplock in Austral. Vet. J. (March, 1957): 68.*

Study of Parathyroidectomized Goats.—The thyroid and parathyroid glands were removed, at the University of Wisconsin, from 3 goats 4 months pregnant, and from 6 kids 8 months old; also, as controls, the thyroid glands were removed from 2 similar goats and 2 kids. The thyroparathyroidectomy resulted in a marked drop in serum calcium but no marked change in the inorganic phosphorus. The serum calcium was further decreased on a low calcium ration. Four of the 6 kids died in 57 to 217 days from parathyroid deficiency. The pregnant goats showed tetany within a week, when 1 aborted. The other 2 were given calcium gluconate daily until parturition. After that, all 3 seemed normal except that lactation was nil. The 2 thyroidectomized goats each had twins and produced milk but less than previously.—*J. Anim. Sci. (May, 1957): 313.*

Hormone Effect on Molting.—In a study of 72 chickens of both sexes, hypofunction of the gonads during molting was shown in entire females by changes in the comb and wattles. In caponized males, the molt was much more severe than in entire males. After ovariectomy, the first molt in hens was severe but subsequent molts resembled those of entire males. After thyroidectomy, there was a decrease in the loss of feathers in both sexes during and between molts.—*Vet. Bull., Item 593 (Feb., 1957): 93.*

Sperm Reservoirs in Hens' Oviducts.—Deep crypts in the wall of the upper oviduct of the hen serve as sperm reservoirs, which accounts for the absence of sperm in the lumen. The oviduct of a hen artificially inseminated three hours previously, was rinsed with Ringer's solution but no sperm were recovered. When an artificial ovum was pulled through the tract, several hundred sperm were recovered, suggesting that they are literally squeezed into contact with the passing egg.—*Poult. Sci. (March, 1957): 450.*

Estrous Cycle and Body Temperature.—Normal women have a biphasic temperature reaction, a low plateau during the first half of the cycle and a higher one during the latter half. The rise (av. 1.12 F.) occurs within two days before or after ovulation and probably reflects hormonal change. —*J.Am.M.A., (Feb. 9, 1957): 484.*

X-Irradiation and Sterility.—Dogs exposed to total body x-irradiation five days a week (3 r weekly) showed a progressive decline in normal spermatozoa after 20 to 30 weeks; the level was about 10 per cent of normal at 40 to 60 weeks and, usually, total infertility within a year. There were no definite ill effects from a rate of 0.3 or 0.6 r weekly.—*Vet. Bull. (May, 1957): Item 1598.*

Clinical Data

Results with Newer Therapeutic Methods in Large Animal Practice. I. Miscellaneous Therapeutic Measures

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THERAPEUTIC METHODS of today seem to be strikingly different than those of a few years ago, much more rational and, above all, much more effective. Present methods often seem to antiquate those of not many years ago; however, we should recognize that the principal means of correction of the disease states of animals are the same today as they have been for many years. A better understanding of many disease problems has resulted in a better approach to their correction, more effective therapeutic products, or wiser use of established products.

The therapeutic products for animal diseases, that today may be considered relatively new, may be placed mostly in five categories: biological, enzymes, antibiotics, sulfonamides, and detoxifying agents. There are other categories but these will illustrate recent advances in the treatment of large animal diseases.

BIOLOGICAL THERAPY

Recent advances in the field of biological therapy are not numerous, but are important.

Hog Cholera.—Field experience with the various modified vaccines for hog cholera has been largely successful but with some disappointments. They usually have produced good immune responses, but experience indicates that breeding stock should be revaccinated to avoid lapses in immunity after 1 year of age. Some of these failures of duration of immunity may be the result of initial vaccination at an early age. There have been fewer postvaccinal problems, in herds of questionable health, with modified vaccines than when virulent virus has been used. Most of the postvaccinal hog cholera we have seen has been in herds naturally exposed before the use of the modified vaccines.

Swine Erysipelas.—The attenuated erysipelas vaccines and the improved bacterins have been used on an appreciable number of swine. The results seem to be satisfactory. Infection has been well controlled but not eliminated in herds in which the disease has a tendency to reappear annually. If the current results continue, the control of swine erysipelas will be greatly simplified.

Enterotoxemia in Sheep.—The development of the *Clostridium perfringens* type D bacterin has been a valuable contribution in the control of sheep losses in the feedlot. The further work on diseases produced by this organism sheds light on the enterotoxemias of calves.

Enterotoxemia (Sudden Death) in Calves.—This condition was first described in 1947[1] as a definite disease entity characterized by sudden death in animals which appeared healthy a few hours before. In 1955, it was differentiated from muscular dystrophy. This disease has been reported from various parts of the United States.

Since many are not familiar with enterotoxemia in calves, the clinical picture as it occurs in Minnesota is presented.

The disease occurs sporadically in calves 2 to 8 months old but it also causes death in adult dairy or beef cattle. There is no common factor associated with feeding or management. Some affected calves were nursing but all were eating hay and some form of concentrate. Their general condition ranged from fair to excellent. Neither a change of ration nor superior condition seemed to be a factor, as is the case in lambs.

Calves, apparently healthy when last observed, may be found dead or in a state of opisthotonos while either standing or in lateral recumbency. Occasionally an animal is observed to go into convulsions and die in minutes to an hour. In these cases, incoordination, frenzied movements, fine to coarse muscle tremors, nystagmus, opistho-

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[1]Schofield, F. W.: Sudden Death in Calves Associated with Myocardial Degeneration. Canad. J. Comp. Med. and Vet. Sci., 11, (1947): 324-329.

tonos, and terminal convulsive seizures are seen. The temperature is usually elevated. In the less severe form, the clinical signs are essentially the same but death does not occur for three to seven days. The calf is usually anoretic and may be unable to rise for several days.

In the chronic or mild form, diarrhea or soft stools may be observed; convulsive seizures occur but the animal recovers and is apparently normal. The seizures may recur several day later and cause death, or the animal may recover again.

Various therapeutic measures have been used but, since the disease is believed to be due to the toxin of *Cl. perfringens* in the intestinal tract, *Cl. perfringens* type C antitoxin is often used both prophylactically and therapeutically. In one group, when 2 calves died of enterotoxemia, 7 of the remaining 14 were given 25 cc. of the antitoxin subcutaneously, while the other 7 served as controls. None of the control calves sickened but 2 of the treated calves developed mild cases of the disease. Both calves received additional antitoxin and recovered. In another herd where 4 of 13 calves had died with enterotoxemia, the remaining 9 all were given 25 cc. of the antitoxin and all remained well. Thus it is difficult to evaluate the prophylactic value of the antitoxin, but the fact that 2 calves developed mild cases is not encouraging.

Of 10 calves given the antitoxin therapeutically, 7 died. All had developed a severe form of the disease. Antitoxin (15 to 75 cc.), administered intravenously, subcutaneously, or both, failed to alter the course of the disease. The 3 which recovered did not develop the severe form of the disease and might have recovered without treatment.

Several affected calves were treated orally or intravenously with tetracyclines, cortisone, vitamin E, and supportive therapy with no apparent benefit.

When several calves with acute calf scours, showing typical watery diarrhea, marked dehydration, and depression within a week of birth, were given 25 cc. of this type B antitoxin intravenously, 5 made a dramatic recovery within 12 hours but other calves with typical cases showed no benefit. On the basis of these observations, it would appear that the toxins of *Cl. perfringens* do play a role in some cases of acute calf scours.

ENZYME THERAPY

Proteolytic enzymes capable of lysing or dissolving necrotic material offer a new approach for debriding a chronic lesion. A number of proteolytic enzymes are found in plant and animal tissues but the usual sources for therapeutic use are beef pancreas or streptococcic organisms. When given locally, intramuscularly, and occasionally intravenously, for several days, they are reported to aid in resolving chronic inflammatory conditions. The resultant liquefaction and drainage of exudate presumably removes pressure within the lesions, provides for better circulation and distribution of medicaments in the area, and aids in the regeneration of healthy tissue. However, in 3 equine cases the results of local enzymes were not generally satisfactory. Two horses with fistula of the withers, treated for several days in conjunction with routine daily flushing and antibiotic therapy, recovered in three weeks but the enzyme did not appear to influence the rate of recovery. Also, a discharging wound of the left hock joint which had been treated systemically with sulfamethazine, penicillin, and tetracycline, with only a recession of fever, improved by the fourth day when proteolytic enzyme* was given intramuscularly, along with tetracycline and the local application of hot packs. However, when therapy was discontinued, the condition deteriorated and the animal died a week later of an overwhelming bacterial infection.

When infectious rhinotracheitis appeared in a group of 240 feedlot steers (500 to 800 lb.), 65 developed moderate to severe cases which required treatment. Before using enzyme therapy, all the steers had been intensively treated with penicillin, dihydrostreptomycin, sulfonamides, and various tetracyclines with little benefit. The more severely affected animals were given enzyme preparations and antibiotics intratracheally—6 were given Varidase† (50,000 units of streptokinase and 12,500 units of streptodornase) and 41 were given Dornavac§ (50,000 units of pancreatic dornase). The penicillin and dihydrostreptomycin solution was used on about three fourths of the steers and the

*Streptokinase, 100,000 units; streptodornase 25,000 units, with plasminogen.

†Varidase was supplied for this study by Lederle Laboratories.

§Dornavac was supplied by Merck Sharp & Dohme.

tetracyclines on several. The total volume of the enzyme-antibiotic solution ranged from 10 to 50 cc.

Of the 47 animals given enzymes, all made full clinical recoveries except 1 which continued to show considerable residual respiratory difficulty. Most of the animals were given two daily treatments but some required four. Marked clinical improvement was usually apparent in 48 to 72 hours with full recovery in a week to ten days.

No difference could be observed in the benefits from the two enzyme therapies, nor between penicillin-streptomycin or tetracycline therapy. More animals were treated with a combination of pancreatic dornase, penicillin, and dihydrostreptomycin because of its lower cost. When a larger amount of the diluent (up to 50 cc.) was given to the more severely affected animals, it seemed to provide a wider distribution of the agents; at least more exudate was discharged and results were better.‖

Approximately 12 other animals have been similary treated with essentially the same degree of success.

In view of the gross pathological changes due to rhinotracheitis, this therapeutic approach seems indicated. The trachea and bronchi in many animals with severe cases contain large amounts of purulent exudate which is firmly adhered to the mucosa. This exudate not only tends to obstruct the passage of air but also provides an excellent culture medium for infectious microorganisms.

There were no side reactions or ill effects observed in the steers treated.

ANTIBIOTIC THERAPY

The treatment of bovine mastitis has undergone a number of changes since udder infusion therapy has been employed. Among the early list of agents, acriflavine and novoxill were popular for a period, followed by the sulfonamides, tyrothricin, and bacitracin. The latter two initiated the field of antibiotic therapy but since then nearly every antibiotic has been tried.

Recently, the anti-inflammatory corticosteroids have been used. Several derivatives or compounds related to cortisone have been incorporated with various antibiotic preparations, designed to destroy the infecting organism and prevent scarring or infiltration of the mammary gland with connective tissue. The anti-inflammatory action has been demonstrated by reduction of the milk leukocyte count but the prevention of scarring can not be critically evaluated.

In routine, single-dose treatment of mastitis, with a preparation containing penicillin, neomycin, polymyxin, and hydrocortisone acetate, of 505 quarters infected with streptococci, 416 (82 per cent) became free of the organisms, and of 102 quarters infected with staphylococci, 29 (28 per cent) recovered. This product consistently gave the best results. The hydrocortisone may have reduced the inflammatory reaction or increased the sensitivity of the organisms to the antibiotics.

In routine antibiotic therapy for miscellaneous infections, penicillin is the most effective in the great majority of cases. The sulfonamides and broad-spectrum antibiotics are extremely important in acute conditions, particularly those caused by the gram-negative organisms. Various vehicles, additives, and combinations of antibiotics all have some individual merit, but they are expensive.

SULFONAMIDE THERAPY

The value of maintaining effective blood levels of sulfonamides is well established, but this is not always easily accomplished. This is illustrated in the treatment of a bull with a pulmonary abscess with associated pleuritis and pneumonia.

The 1,500-lb. Guernsey stud bull, 7 years old, treated by rumenotomy for traumatic reticulitis in November, 1955, had since suffered intermittent attacks of respiratory infections. Several days before being returned to the clinic, in April, 1956, he was given 2,000 gr. of a sulfamethazine intravenously and 500 gr. twice daily for the next two days without appreciable improvement.

On examination, there was evidence of an abscess of the left diaphragmatic lobe of the lung with an adjacent pneumonia and pleuritis. He refused feed, appeared depressed, had about one degree of fever, the pulse rate was increased, and respiratory movements of the thorax were somewhat restricted. He was given approximately 1 gr. per pound of body weight of a "triple sulfonamide" preparation daily for five days. Improvement was gradual but continuous for seven days, and the bull was discharged in ten days with a mild

‖Treatment and observation by Drs. E. Fredrickson and P. C. Enge of Windom, Minn.

bronchitis still present. There has been no recurrence.

Of the sulfonamides recently introduced, sulfabromomethazine, a brominated derivative of sulfamethazine, has the desirable property of maintaining therapeutic blood levels in cattle for 48 to 60 hours following a single oral dose of 1.5 gr. per pound of body weight. Six calves with bronchitis, pneumonia, and enteritis were treated with this drug alone and all recovered following one dose, or two doses 48 hours apart.

Results with Newer Therapeutic Methods in Large Animal Practice. II. The Role of Fluid and Electrolyte Therapy in Lead Arsenate Poisoning

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On April 30, 1956, a herd of dairy cows and heifers was placed in a new pasture at a state hospital farm. The third day, 1 was sick. On the fourth day, this animal died and 2 other heifers were sick. On the sixth day, these 2 heifers died and 3 more were found sick. A can of lead arsenate found in the pasture showed evidence of having been disturbed by the cattle.

On May 8, the 3 affected animals were trucked to the clinic but 1 died en route. The 2 surviving yearling heifers were extremely depressed. Heifer A was ataxic, while heifer B lay prone and unresponsive to all efforts to roll her onto her sternum. Both exhibited a profuse, watery diarrhea and signs of dehydration.

The significant initial laboratory findings were:

1) *Arsenic.*—Analyses of material from the heifer that died en route revealed over 10 p.p.m. of arsenic in the rumen contents and between 5 and 10 p.p.m. in the liver—both well in excess of normal.

2) *Lead.*—The concentration of lead in the blood of heifer A was within the normal range, but in heifer B it was 0.3 p.p.m. which is well above normal and sometimes associated with clinical signs of plumbism.

3) *Plasma Bicarbonate.*—The plasma bicarbonate levels in both heifer A (25 mEq./l) and heifer B (17 mEq./l) were below the normal range, which indicates the presence of metabolic acidosis.

4) *Hematocrit.*—Both heifer A (50%) and heifer B (47%) had packed cell volumes which indicated a degree of hemoconcentration, such as is frequently associated with dehydration.

The two primary therapeutic objectives were (1) the removal of arsenic from the tissues and (2) the resolution of the acidosis and dehydration.

British anti-lewisite (dimercaptopropanol) was administered to both animals by deep intramuscular injection (1 mg./lb. of body weight) four times daily the first day and three times on each of the succeeding three days. Edema and pain of the injected areas were evident by the end of the course of administration.

Lactated Ringer's solution, which closely approximates the electrolyte pattern of blood plasma, was used. However, the heifer (B) with the more severe metabolic acidosis was also given considerable quantities of a balanced electrolyte solution* which differs from lactated Ringer's solution in that the concentrations of bicarbonate and potassium are twice those of blood plasma. The amount of electrolyte solution given was 4 liters three times daily the first day and twice the second day, half intraperitoneally and half intravenously; the total representing 2 to 3 per cent of the body weight per day. Such volumes are not large when compared with current fluid therapy standards in human medical practice.

During the first three days of therapy, the heifers became less depressed, showed some interest in feed, and the diarrhea abated considerably. The return toward normal of both blood serum bicarbonate values and hematocrit values was striking (table 1).

Improvement was marked during the first three days but slow and incomplete subsequently. Four months later, the heifers were reported as not being normal either in body weight or in general condition. This suggests that irreversible pathological changes had occurred.

It is difficult to state how much of the success attained was attributable to the presumed removal of arsenic from the body

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*Composition (expressed as grams per liter of aqueous solution)—sodium chloride ($NaCl$) - 5.5, calcium chloride ($CaCl_2$) - 0.5, magnesium chloride ($MgCl_2\ 6H_2O$) - 0.3, sodium acetate ($NaC_2H_3O_2\ 3H_2O$) - 5.0, potassium acetate ($KC_2H_3O_2$) - 1.0, sodium citrate ($Na_3C_6O_7\ H_2\ 2H_2O$) - 0.8.

TABLE 1—Blood Analyses on 2 Heifers During BAL Therapy for Lead Arsenate Poisoning

	At entry	+2 days	+6 days	+7 days	+9 days
Plasma bicarbonate mEq./l.					
Heifer A	25	29	36	31	30
Heifer B	17	35	31	27	27
Hematocrits (vol./100cc.)					
Heifer A	50	41	30	31	30
Heifer B	47	40	28	31	30

and how much was attributable to the reversal of the dehydration and acidosis. Good experimental evidence exists for the efficacy of BAL in the treatment of arsenic poisoning, and laboratory evidence is presented for the prompt resolution of metabolic acidosis and hemoconcentration in these 2 animals.

It is of interest that the signs observed in these animals were characteristic of arsenic poisoning rather than lead poisoning. The relatively slight increase in blood lead in the 1 animal and the absence of any elevation of blood lead in the other tends to confirm the conclusion that acute lead arsenate poisoning is a therapeutic problem involving primarily the arsenic present rather than the lead. The incomplete recovery should serve to caution against a prognosis of complete therapeutic success after the period of acute danger has passed.

The value of fluid therapy in the treatment of arsenic poisoning should be emphasized. The marked dehydration and acidosis present in this condition should be considered of equal importance to the presence of the arsenic or lead. Although the volume of fluids and electrolytes used was far below the actual volume depleted, this treatment was undoubtedly responsible for much of the early improvement.

Many animals treated today receive supportive therapy in the form of fluids containing electrolytes such as sodium and calcium salts, or fluids containing dextrose and other carbohydrates. Usually the dosage given, particularly of dextrose, does not meet the immediate demands of the patient—the volume is usually too small and the concentration too high. This means an inadequate correction of the fluid balance and, frequently, an aggravation of the problem by the diuretic effect of the products administered. Less than 2 liters of fluid twice daily for a 1,000-lb. cow seems of little value. In severe dehydration or acidosis, two to three times this volume is needed, including electrolytes as well as energy. When weakness is the principal problem, 2 liters of 5 per cent dextrose in normal saline every four hours often produces marked improvement and, on occasion, will get an extremely weak animal to its feet. When 3 liters or more is given, it is best to give 50 to 75 per cent of the fluid intraperitoneally or subcutaneously. This permits better utilization of any dextrose given and avoids overloading of the circulatory system.

Of the many metabolic functions that are influenced by water loss, the effects on the digestive system are among the most apparent. When enteric disorders such as a persistent diarrhea are the underlying cause of dehydration, one must consider the pathological changes in the digestive tract, the increase in gastrointestinal activity, and the accompanying disturbances in both the digestion and assimilation of feeds. When the dehydration is due to other causes, the digestive system is also affected. In cattle, the rumen contents become dry, atony of the rumen commonly occurs, the rumen flora changes, and digestion in the rumen is diminished.

Because of the effects of dehydration on the gastrointestinal tract, one of the most effective ways of correcting the condition is by oral administration of water alone or of water with nutrients in solution or suspension. This method of fluid and supportive therapy has been a simple, inexpensive, and highly effective procedure. It proves beneficial in cattle that fail to consume adequate water, those that have excessive fluid loss as a result of fever, and those that show anorexia. Like most therapeutic procedures, the administration of fluids can be overdone regardless of the route of administration, but too often we give too little too late. Once the animal shows improvement in hydration, it is best to reduce or discontinue the treatment to avoid discouraging or interfering with the return of voluntary intake of fluids and feed.

Recently, a hamster in a Maryland laboratory caught a common cold. This is the first time a laboratory animal other than the chimpanzee has been known to catch cold.—*Lab World (March, 1957): 138.*

Experimental Investigations on Current Strains of Hog Cholera Virus*

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THE MATERIAL for these studies was secured from infected animals in farm herds, much of it brought to the Iowa Diagnostic Laboratory for confirmation of the veterinarians' diagnoses, but some was secured from several herds, in which cholera was suspected, in our immediate neighborhood.

Blood, livers, kidneys, and spleens were usually selected for study. A 10 per cent spleen tissue emulsion, made with sterile distilled water, was centrifuged and the supernatant liquid was filtered through a Selas porcelain filter (0.015). All filtrates were tested on culture mediums for bacterial contamination and inoculated into guinea pigs, rabbits, white rats, and mice to detect the presence of any pathogenic virus other than hog cholera which might be present. This precaution is especially valuable in studies involving virus strains of low pathogenicity. The filtrates were inoculated into susceptible pigs.

VIRUS STRAINS

The field problems which reach the laboratories usually represent infected herds in which the swine show little or no evidence of hog cholera.

A limited number of strains of hog cholera virus exhibited a high degree of pathogenicity but, because of their peculiar characteristics and unusual reactions in infected swine, created diagnostic problems to the veterinarians. Several viruses isolated possessed characteristics similar to those associated with the so-called "variants." Most of the virus strains which have been isolated from these infected swine herds have been of a low order of pathogenicity as indicated by titration experiments.

Virus strains which proved to have a high degree of pathogenicity, both in the field and under experimental conditions, transmitted a disease which ran a short course, produced a severe reaction in the infected swine, and caused a high mortality. The pathological changes usually associated with hog cholera were either vague or absent. Some of these virus strains were fairly stable but others were unstable as determined by serial passage through susceptible swine.

Variant strains of virus appeared occasionally as a reminder that these are still with us. Several of such viruses were found to have variant characteristics, but two strains which were submitted as variant strains did not show characteristics associated with this type of virus, nor could they be reproduced by the usual laboratory procedures. All of these strains were rather unstable and none was able to break down well-established immunity in vaccinated pigs.

Strains of low pathogenicity have been called to our attention more often this past year (1956) than ever before. They have occurred in vaccinated as well as unvaccinated swine herds. If vaccinated, the method or the vaccination products used had no significance. Laboratory studies indicated a remarkable degree of stability in these viruses.

Infected swine develop only mild clinical manifestations, if any. The mortality is comparatively low with no losses in many instances. Recovery may be complete or partial, with continuing growth and development, but the pigs do not have the quality of normal pigs of comparable age. Others are not economically profitable to maintain. Following recovery, a suitable degree of immunity is established. When these virus strains were used under experimental conditions, the resulting clinical reactions and pathological changes were similar to those observed under the original field conditions; many caused only mild temperature reactions, others produced no significant temperature reaction. Some infected animals ate little, while others ate normally.

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*Because of the similarity to the report on the same subject by the same author (April 1, 1956, JOURNAL, pp. 352-354), only excerpts of the paper giving the more recent observations are reported here.

DIAGNOSIS

It is practically impossible to make an accurate diagnosis when infected animals show no characteristic signs or lesions associated with hog cholera, and when there are few or no losses in the herd. Following the reaction period, if these pigs prove to be immune to 5 cc. of commercial hog cholera virus, it is good evidence that the infection was due to a hog cholera virus strain of low pathogenicity. This method of diagnosis is time-consuming and costly.

CURRENT MANIFESTATIONS

For many years, hog cholera has usually occurred as an acute septicemic form of the disease. Sudden deaths due to the peracute forms of the disease, in which diagnostic signs and lesions were absent, were occasionally observed but other animals in the same herds usually provided typical signs and lesions upon which to make a diagnosis. The disease usually ran a short course with high mortality.

In recent years, an increasing percentage of infections, in which the clinical manifestations were practically absent and temperatures sometimes did not reach a significant elevation, occurred in the field. Slight restlessness, or exceptionally mild nervous reactions were sometimes the only signs observed.

The pathological changes in the tissues of the infected swine likewise have undergone a gradual transition. Typical lesions associated with hog cholera are still observed in many animals infected with field viruses of high or average pathogenicity, but the majority of the low pathogenic virus strains cause few, if any, definite lesions. Low-grade cholera infections resemble some of the chronic forms of the disease which have existed in Europe for some time.

Lymph nodes with varying degrees of hemorrhage, well-defined marginal lesions on the spleen, typical petechiae on the kidneys and serous surfaces, characteristic of the acute form of the disease, are seldom observed in low-grade virus infections. Lymph nodes may show only edema or slight congestion, but congestion and limited hemorrhages on the mucosa of the bladder are more often encountered in low-grade virus infections. The histopathological changes indicate milder tissue reactions, including a vasculitis rather than the degenerative tissue changes accompanied by numerous hemorrhages which have been associated with hog cholera in this country for years.

Blackberry Vines in Nasal Tracts of Cattle

Cattle in the intensive berry-farming area of the Puyallup Valley in western Washington, mostly family cows grazing woodlands or pastures where many wild, creeping blackberries (*Rubus macropetalus* or *Rubus laciniatus*) grow, are often bothered with pieces of stems of this vine becoming lodged in the upper passage of the nasal cavity.

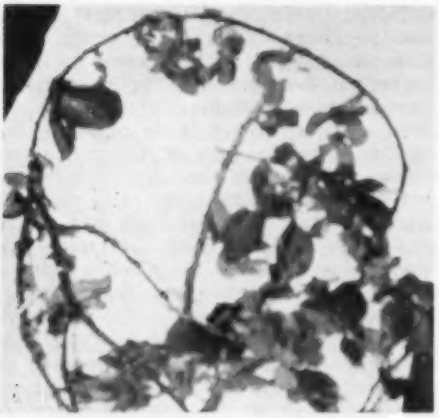

Fig. 1—Photograph of the creeping blackberry vine.

At first, the animal shows signs of annoyance and often a slightly blood-tinged nasal discharge. Occasionally, the stems are well forward and are visible when the head is lowered to eat, or the nostrils are relaxed, but they vanish when an examination is attempted. These creeping vines have clawlike thorns (fig. 1) that prevent them from being expelled. They enter from the pharynx, but whether before being swallowed or after regurgitation is not known. They usually lodge in the upper, rear portion of the nasal cavity, sometimes in bundles of several sprigs, each 3 to 5 inches long. Many years ago, we examined affected cows at slaughter in hope of devising a simple means of surgical relief, but the structures were too complicated.—*V. C. Pauhlman, D.V.M., Prosser, Wash.*

What Is Your Diagnosis?

A case history and accompanying photograph depicting an unusual condition appears below.

Make your diagnosis from the picture below—then turn the page ▶

Figure 1

History.—A female, Boston Terrier, 4 years old, was euthanatized because of chronic dyspnea and faulty ambulation. The trachea and larynx were opened and photographed.

(Diagnosis and findings are reported on next page)

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Eversion of the lateral ventricles of the larynx of a dog.

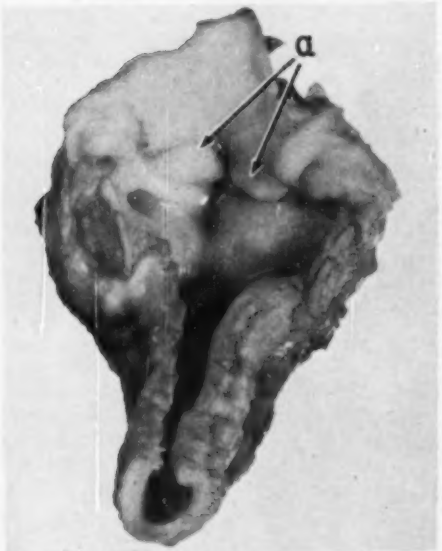

Fig. 2—Photograph of the opened larynx of a dog showing everted lateral ventricles.

Comments.—The first report of this condition, of which we are aware, appears on page 83 of this issue. This lesion was found as the result of interest aroused in reviewing that article. This prompt coincidence suggests that this condition may have been overlooked in animals with chronic dyspnea.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

This case was presented by the staff of the Riser Animal Hospital, Skokie, Ill.

Fluid Therapy in the Dog

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VETERINARIANS have obtained much information regarding fluids and their use in animals from studies of such procedures in man.

In man, it has long been recognized that fluid need is a common problem. For years, the answer to this problem was to use the ambiguous word "dehydration."[1,3,9] To relieve dehydration, so-called "normal saline," either 0.85 or 0.90 per cent NaCl, with or without 5 or 10 per cent dextrose, was used. Academically, this seemed like a simple answer to a simple problem. However, it soon became clear that this procedure was clinically unacceptable since heart block, lung collapse, and exhaustion of the patient occasionally resulted from improper use of fluid and electrolytes.[2,6,15,19] Also, as late as 1934, there were numerous pyrogenic reactions in man following the use of intravenous solutions. Pyrogens were discovered in 1923,[22] but it was a decade before this information became commonplace.

A little more than ten years ago, it became known that NaCl in the body disassociates into sodium and chloride, and that the sodium and chloride does not remain in the proportion of 1 to 1 as it occurs in the NaCl.[7,23] This changed the concept of dehydration. Also of recent date, the use of the flame photometer and radioactive isotopes as tracers made possible the study of many elements in the living body. It was found that often a problem might be principally either a deficiency of water or salt, or various salts, or a deficit of both water and salts, and in varying proportions. The need of fluid or various salts, or both, is not always a simple problem. A patient's condition can be made worse by the use of electrolytes when there is principally a water depletion situation, or by the use of water when salts are the principal deficiencies.[2,6,15,19]

In man, when there is insufficient water intake, the need is chiefly for water, which is probably most commonly provided as a dextrose solution. Also in man, during and after the stress of surgery, anesthesia, sedation, and some illnesses, the kidney seems unable to eliminate salts.[9,16] In other words, the stress problems may cause salt retention in the body of man. Immediately after surgery in human medicine, it is common practice to inject only a dextrose and water solution[9,16] with additives, such as vitamins or antibiotics, or both.

One of the most spectacular uses of fluid and electrolytes is in the human infant with severe diarrhea. (The young in any species dehydrates up to seven times faster than the adult).[10,24] In human pediatrics, severe water and multiple salt depletion problems need immediate attention. Whenever possible, the infant is sent to pediatric services where there are facilities to determine and correct the specific deficits of electrolytes or water, or both. It is then possible to follow the changes in each case. The mortality in infants due to diarrhea has been reduced from 30 per cent to less than 1 per cent[8,25] because of an understanding of the fluid and electrolyte needs. The pediatrician often used hypotonic multiple electrolytes with glucose. These solutions have a wide margin of safety in human pediatric work.[8,25] Fluids are not extensively used intravenously in small, young, pet animals because such administration is not routinely practical.

There is some possibility that we, as veterinarians, have been receiving our fluid and electrolyte information from some of these precepts and that we have been applying this information in our practices. This is probably true in any case where immediately following surgery in the dog we have given intravenous dextrose (no salt), with any vitamin additives or antibiotics, or both, that we might think wise. This is also true when we have given normal saline, with or without dextrose, intravenously for several days postoperatively. Also, many veterinarians, perhaps most, have been guilty of injecting dextrose with or without saline or multiple electrolytes or amino acid solutions, either intraperitoneally or subcutaneously. In man, solutions of dextrose in water are used intravenously during and immediately after surgery. However, in the dog, one is justified in using multiple electrolytes,

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dextrose, and water intravenously, with or without additives, during or following surgery because man and dog show a biological difference in their handling of electrolytes and water under stress of surgery and anesthesia.[26]

It has been stated[9,16] that after the stress of involved surgery in man, the kidney takes several days to return to its normal ability to handle electrolyte combinations, or just the plain electrolyte NaCl. Intravenous salt injections given in man at this time may cause generalized edema or a fatal pulmonary edema. These precepts are not true of the dog. Also, when there is reasonably good kidney function in man or dog, there is selective action by the kidneys in using the electrolytes which the body needs and discarding the ones it does not need. This has been called the homeostatic capacity of an individual. One might say that under normal conditions the nutrients which an individual needs are utilized from the oral intake of food, and there is subsequent disposal of waste products including various salts. In such generalizations, there would be, of course, as many variables as there were situations. However, it is axiomatic in the problem of body function that the more the stress of the individual or situation, the greater the over-all needs. At the same time, there is a narrower margin of tolerance of the individual's ability to handle water, sugars, and multiple electrolytes wrongly administered.

For example, a healthy 2-year-old dog may be kept at a normal, optimum weight and hemoglobin level by one feeding a day. The intake and the disposal of waste products balance each other. Should this animal suffer severe traumatic injury, then it is not possible for one feeding a day to take care of the animal's increased needs in both calories and electrolytes. The tolerance of the animal is lessened and the needs are increased. At this time, it would be an error to inject the daily requirement of calories and electrolytes in a short space of time. It is easy to think of the above with regard to calories but it is probably true that the electrolyte balance of the animal is equally important. There is a difference between the parenteral and oral intake. The amount of the element potassium in meat that a man or dog may safely consume in one meal would be fatal if injected intravenously. Also, there is a lower margin of tolerance of the kidney in the older animal and in the animal with some degree of nephritis. As stated above, stress factors also affect the margin of tolerance in kidney function.

FLUID USE IN SURGERY

I have given multiple electrolytes and water to at least 1,000 animals under anesthesia, usually during but sometimes after surgery, without a single known case of injury from water or salt retention. The dog in shock forms no urine until the situation is corrected. With fluid therapy, these animals formed urine early after anesthesia, creating a situation where there was little possibility of shock. Thus, we actually try to prevent shock by the early use of fluids. We are not discussing need for blood transfusion, which is so important in shock,[11,27] or protein deficit as it contributes to the over-all shock problem,[31] or the bacterial factors which are present in every surgical or medical shock situation of the dog.[32,33]

In our practice, 95 per cent of the animals given fluid electrolytes during the stress of surgery receive them only once. We were in error years ago in giving normal saline and dextrose solution intravenously for a few days to many surgical patients. We want the animal up and well on feed as early as possible because the animal that eats and moves around usually takes the amount of fluid needed. This is one reason why old patients do better at home during convalescence and are treated postsurgically, if necessary, as outpatients. Although we have no way to academically balance the parenteral intake in the animal at present, it is possible to have simple fluid and electrolyte routines that are acceptable clinically. What we do must be good for the patient. After the animal is on its feet, the needed electrolytes, proteins, sugars, and vitamins are utilized most efficiently when given orally.

When a resuscitative agent is needed during or after anesthesia, I now use 5 per cent dextrose with either lactated Ringer's solution or Polysol*, or Ionosol D-CM†. The injection is always made intravenously and the dosage is 10 to 15 cc. per pound of body weight. For routine use of any of these solutions, we always add to each liter[12,28] 20 cc. of 10 per cent cal-

*Cutter Laboratories.
†Abbott Laboratories.

cium gluconate, 1,000 mg. of ascorbic acid, 10 cc. from a 30-cc. bottle of vitamin B complex (5X SoluB**), and 500,000 units of crystalline penicillin. This solution enhances the early and necessary functioning of the kidneys.

During surgery for pyometra, cesarotomy, or many abdominal operations, one may watch and judge the resuscitation of the animal by the filling of the bladder. In shock, no urine is formed to enter the bladder.

We probably find a need for electrolytes and water, during or immediately after surgery, 25 times more often than we find a need for blood transfusion. When we use blood transfusion of 8 cc. per pound of body weight,[11,27] we also almost always use the fluid electrolyte and additives in the dosage of 15 cc. per pound of body weight. Actually, the over-all needs for resuscitation after surgery are whatever it takes to have an animal urinate, wake up, drink water, eat, and move around, in that order.

UNCOMMON MEDICAL CONDITIONS

Confining a nervous animal may cause central nervous stimulation, resulting in overbreathing (primary alkali deficit)[13,20,34] and elevation of temperature. It is possible that in two hours the nervousness subsides, the overbreathing stops, and the temperature returns to normal. If such an animal is confined in a kennel in the sun, its temperature may be 105 F. or higher in 30 minutes. Also, when a drug such as morphine is used as a preanesthetic agent, there is occasionally central nervous stimulation and overbreathing. When these conditions are combined, the central nervous stimulation and overbreathing are intensified. Many such drugs also depress respiration and cause loss of efficiency of the animal's thermal regulatory center. If a nervous animal were given morphine and, an hour later, a barbiturate intravenously, its temperature could be 105 F. or more in an hour or two, accompanied by overbreathing and an acute primary alkali deficit[13,20,34] (respiratory alkalosis). If the temperature were high, there would be a need of multiple electrolytes and water (10 to 15 cc./lb.). (These are some of the reasons that animals respond differently to blanketing and the use of heating appliances when under anesthesia.)

There is often a tendency of calcium tetany in these conditions.[3,17,34] The fluid combination herein described, with calcium added, for use during or after surgery, aids in correcting this situation including reducing the temperature and eliminating the drugs used.

In my practice, heat stroke is uncommon except for the occasional animal locked in a car. One dog had a temperature of 110 F. and survived. The same intravenous fluid combination works almost as dramatically as intravenous calcium gluconate in eclampsia.

The clinical picture in *Leptospira canicola*‡ infection in a dog was one of lethargy, some vomiting, uremia (b.u.n. 130), and dehydration and, therefore, a metabolic acidosis. It was given the same fluid combination as described for the surgical routines. Its weight, hematocrit, and urine returned to normal in about one month.

Thus, the animal in heat stroke with its overbreathing and calcium tetany and the animal with leptospirosis (this animal also has a calcium need), both have a clinical primary alkali deficit, the variation being in the cause and in the degree. (The correction time of some medical problems often tends to equal the duration time.)

Clinical observations indicate that when the acute phase of a stress situation is passed, electrolytes, sugars, and proteins are most efficiently utilized when given orally and frequently. The animal will then usually drink the water needed. The animal's weight and hematocrit[29] values should be observed; several determinations in one day may be necessary. Often urine examinations are of value.

FLUIDS FOR YOUNG, ILL ANIMALS

The injection of a dextrose solution with or without 0.85 per cent NaCl or multiple electrolytes, subcutaneously or intraperitoneally, is in error.[26,27] In the ill, young animal that has severe electrolyte or water depletion, or both, such injections of dextrose may prolong the illness or precipitate death. The sugar so used causes adsorption or withdrawal of water and multiple electrolytes from the animal's circulatory tree before there can be adsorption of the sugar and water and then physiological use. To state again, there is a variation

**Upjohn Company.

‡The diagnosis in this case was confirmed by urine and blood cultures, and also by serial serological examinations by U.S.P.H.S., Communicable Disease Center, Leptospira Research Laboratory, Atlanta, Ga.

in the animal's ability to handle water, sugar, and electrolytes wrongly administered.

Approaching this problem from another angle, in the treatment of the ordinary dehydrated pup or kitten, about 6 or 8 weeks old, with a temperature of 105 F., diarrhea or vomiting, or both, and anorexia, one would not inject 15 cc. per pound of normal or 1/6 molar sodium lactate. This would give too much sodium and would unbalance the electrolyte system. Neither would one consider injecting 10 or 15 cc. per pound of NH_3Cl in physiological dilution for the reason that this amount of chloride would be excessive and would cause electrolyte imbalance. Intravenous dextrose would only waterlog and exhaust the animal. So-called "normal" saline is not a rational solution to use either.

In an 0.85 or 0.9 per cent NaCl solution, the proportions of sodium to chloride is 1 to 1, whereas in blood the proportion of the sodium to chloride is 1.4 to 1.0.

Ringer observed that the heart taken from a frog would beat longer when a small amount of potassium chloride and calcium chloride was added to the sodium chloride solution. The proportions in Ringer's solution of the sodium to the potassium to the calcium are about the same as in plasma. However, there is still an imbalance between sodium, calcium, and potassium, and the chlorides. Clinically, the change from 0.85 NaCl to Ringer's solution was a forward step. In Hartman's modified Ringer's solution (sometimes called lactated Ringer's solution), the salts are almost the same as found in the plasma of man or other animals. This is an excellent electrolyte combination for use in the dog or cat; it may be injected subcutaneously or with dextrose intravenously.

The young animal with fever, anorexia, and diarrhea is usually in immediate need of electrolytes and water, especially the thin animal. (Actually this animal has almost every known need.) For such, we now use one of the multiple electrolyte solutions[38] (no dextrose), and inject 10 or 15 cc. per pound subcutaneously. Polysol and Ionosol D-CM are like lactated Ringer's solution except they have a little more than twice as much potassium, a little less than twice as much carbon dioxide combining power, and a small amount of magnesium. Clinically, Polysol is handy and economical. One may insert a 1-inch, 20-gauge needle in the rubber cap and hang the bottle up to use as needed. (These solutions also can be used for diluting most intravenous and subcutaneous solutions.)

When the young, pet animal needs water and electrolytes, 10 or 15 cc. per pound is in order. One subcutaneous injection of fluid is usually sufficient to give the young animal the start it needs. This is even more true where there is fever and diarrhea, and perhaps always a tendency towards a metabolic acidosis. There is a water deficit and the sodium loss is proportionally greater than the chloride loss. Carbon dioxide combining power is lost. Of almost equal importance in many stress situations is the potassium loss.[4,14,18,21,35,40] Apparently, the sodium, potassium, and lactate content of these solutions, from which the carbon dioxide combining power is derived, is sufficient for the needs of 90 per cent of the young animals in my practice.

The pup with extreme anemia from hookworms needs whole blood transfusion for survival. It also needs water and electrolytes which may be given subcutaneously.[30] In addition, it can use antibiotics and vitamins.

CONCLUSION

For the young pup or kitten that needs water and electrolytes, plain lactated Ringer's solution or Polysal or Ionosal D-CM (10 to 15 cc./lb.) is indicated and given subcutaneously. (No sugar subcutaneously or intraperitoneally.) There are no contraindications for using solutions intravenously except that in the very small animal it is often impractical.

For resuscitative aid of surgical patients, these solutions should be used intravenously, with 5 per cent dextrose and with the additives. We use disposable plastic intravenous equipment.

In the past 15 years, clinical veterinary medicine has become more involved than ever before. Actually we are only beginning to develop knowledge of fluid-electrolytes and their clinical application in the dog or cat. Homer Smith, the present-day kidney physiologist and philosopher, states "The ever-widening horizons and increasing details of medicine make the art of healing more difficult and yet more certain."[39]

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Peritoneal Lavage in Uremia in Dogs*

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Peritoneal lavage, a procedure which has been used on bilaterally nephrectomized dogs, in medical research on hypertension,[1] may be useful in canine practice.

Dogs have been kept alive as long as 111 days by this intermittent peritoneal lavage, which serves as a substitute for the excretory but not the metabolic functions of the kidneys.

The procedure consists of injecting into the peritoneal cavity a lavage fluid approximating the electrolyte composition of the tissue fluids. The peritoneum acts as a dialyzing membrane so that urea, nitrogenous wastes, and all electrolytes not present in the lavage fluid tend to diffuse into the peritoneal fluid. When this fluid is withdrawn from the peritoneal cavity, after two hours, the diffused materials are removed. Positive, rational help is thus given to uremic patients.[2,5]

These lavages are contraindicated in the presence of peritonitis or following abdominal surgery, and are of no avail in chronic nephritis with extensive permanent kidney damage. However, the procedure has been used practically in our clinic for over three years, with good results in many cases. It is indicated in certain cases of acute and chronic uremia and certain intoxications.

In acute uremia, lavages are useful following severe crush injuries, nephrotoxic poisonings, tubular necrosis, sulfonamide crystalluria, acute nephritis, and leptospirosis. Most of our successful experiences have been with leptospirosis.

In chronic uremia, some animals which have become decompensated following exposure, infections, fevers, excessive work,

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*Excerpts from Dr. Kirk's paper "Rational Use of Fluids in Small Animal Practice," presented at the Ninety-Third Annual AVMA Convention, San Antonio, Texas, Oct. 15-18, 1956.

TABLE 1—Composition of the Rinsing Fluid for Peritoneal Lavage, Units per Liter

Drugs	Amount
Sodium chloride	5.50 Gm.
Sodium lactate	4.00 Gm.
Potassium chloride	0.30 Gm.
Magnesium chloride	0.20 Gm.
Calcium chloride	0.36 Gm.
Glucose	13.50 Gm.
Sucrose	16.00 Gm.
Penicillin	50,000 units
Dihydrostreptomycin	0.075 Gm.

or protein intake are able to become compensated again following use of the peritoneal lavage procedure and good nursing care, provided there is considerable functional kidney tissue remaining.

In case of intoxication, particularly with bromide, salicylate, and barbiturate poisonings, peritoneal lavage is useful. In two cases of barbiturate idiosyncrasy, we have produced clinical improvement and removed demonstrable amounts of barbiturate in the lavage fluid.

CORRECTION OF ELECTROLYTE IMBALANCE

Because electrolytes tend to pass through the peritoneal membrane and equalize on either side, electrolyte excesses and deficiencies may be corrected by corresponding changes in the composition of the lavage fluid.

The lavage fluid (table 1) should contain about 400 millimols per liter to be isotonic. If it contains more, the procedure will remove water from the body; if it contains less, it will contribute water to the body.

Osmotic changes are made by adding or subtracting glucose. Lactated Ringer's solution is commercially available and closely approximates this formula with the exception of the glucose, sucrose, and antibiotics which must be added.

TECHNICAL PROCEDURE

Using aseptic technique, either a 16- or 18-gauge needle is inserted through the wall of the abdomen and warm fluid is injected into the peritoneal cavity until the abdomen is moderately distended. This may take 400 to 2,000 cc., depending on the size of the dog. It is important to use volume that will adequately fill the cavity. After two hours the solution is withdrawn, using a 13-gauge, 3-inch needle with the sides of the terminal 1 inch perforated with small holes like a suction nozzle. If the omentum occludes the needle openings, they can be cleared by reinjecting a little fluid. When a large volume of fluid is used, there will be less difficulty in removing the solution; this may be of critical importance. A large volume of fluid also places most of the peritoneal membrane in contact with the solution and produces a more effective dialysis.

The rinsing or lavage procedure is repeated two or three times a day for three or four days. It seems impractical to continue it longer, as most animals that can be helped will show response by that time.

TABLE 2—Comparison of Urea Nitrogen Levels in a Dog with Acute Nephritis

Date	Blood	Recovered lavage solution
2/26/55	275 mg./100 ml.	222 mg./100 ml.
2/27/55		
a.m.	.....	202 mg./100 ml.
p.m.	128 mg./100 ml.	Not measured
2/28/55		
a.m.	45 mg./100 ml.	48 mg./100 ml.
Noon	.....	45 mg./100 ml.
p.m.	33 mg./100 ml.	40 mg./100 ml.
3/ 1/55*	45 mg./100 ml.	No lavage
3/ 3/55	35 mg./100 ml.	No lavage
3/17/55	22 mg./100 ml.	No lavage

*Agglutination lysis titer with Leptospira canicola: blood 1:30,000; urine 1:32.

The benefit from this treatment is shown (table 2) in the receding urea nitrogen values in the blood and lavage fluid used in a dog with acute nephritis, which previously had shown no improvement.

CONCLUSION

Intermittent peritoneal lavage is a practical clinical procedure which can be used as a temporary substitute for the excretory functions of the kidney.

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Intradermal vs. Subcutaneous Vaccination of Calves for Brucellosis.—Brucellosis-free calves were vaccinated with strain 19 vaccine—13 subcutaneously (5 ml.), and 13 intradermally on the side of the neck (0.2 ml.), and 4 were left as controls. Each was bred when 15 to 18 months old and, when four months' pregnant, was exposed by conjunctival instillation of *Br. abortus*. Of the 13 which had been vaccinated intradermally, 5 aborted at 186 to 218 days, and the organism was recovered from the uterus and the fetus of each. Of the 13 vaccinated subcutaneously, 1 aborted at 223 days and the organism was likewise recovered. The organism was also recovered from 2 other cows—from the milk and uterus of 1 and from the milk of another. Only this pair and those which aborted had high blood titers. Of the 4 controls, 3 aborted at 170 to 232 days, but the fourth remained negative.—*Gilman and Hughes in Cornell Vet. (April, 1957): 291.*

Aluminum Salts in Vaccines.—The adsorptive properties and the resulting "depot-effect" are apparently not the only beneficial role of aluminum in a vaccine. The marked increase of the blood aluminum level in cattle after vaccination suggests that the antigen is not freed but remains combined with the aluminum. Tests on 66 cattle with an aluminum salicylate vaccine, which produced an immunity equal to that of aluminum hydroxide vaccines, indicate that the aluminum-antigen combination is effective.—*Arch. Exptl. Vet. Med., 9, (1955): 724.*

Mastitis Therapy.—A plan for treating mastitis, used by a Wisconsin veterinarian, is reported in the *Farm Journal* (May, 1957). When mastitis is suspected in a herd, the Hotis test is used on a sample of milk from each cow. Then, the test is repeated on milk from each quarter of the affected cows. Milk from these quarters is then cultured on mediums with "a spot" of each of various antibiotics to determine which will prevent growth. The most effective antibiotic, if any, is then used to treat the quarter.

A 9-year-old cow that was thought to have recovered, because she had just made a good butterfat record, was positive to the mastitis test. After treatment, her fat production for 53 days was 25 per cent greater (a $41 increase in income) as compared with the similar period in her previous lactation.

Chlorinated Naphthalene Poisoning.—Chlorinated naphthalene poisoning of cattle was observed in central Germany in 1954 and 1955. The names "hyperkeratosis," "x disease," and "malignant intestinal catarrh," often applied to this disease, are not considered satisfactory. Hyperkeratosis was not found in cattle with acute or subacute infections first suspected of being rinderpest. Abortions, lacrimation, cessation of lactation, diarrhea, salivation, and papular and ulcerous changes of the gastric mucous membrane were the predominant signs.

The poison came from ingested baling twine which had been impregnated with wax. One meter of twine contained approximately 0.05 Gm. of highly chlorinated naphthalene. The typical subacute disease was reproduced by feeding these substances to cattle. Pigs, cats, and 1 sheep were also affected but the disease could not be reproduced in a horse.—*Arch. Exptl. Vet.-med., 10, (1956): 97.*

Diagnosis and Treatment of a Dog with Acinar Atrophy of the Pancreas

ALLEN WOLFF, D.V.M.; EDWARD F. DONOVAN, D.V.M.;
SVEND W. NIELSEN, D.V.M., M.Sc.

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PANCREATIC DISEASE is sufficiently common in the dog to warrant discussion and presentation of a case history. It has been classified under four types[10]: (1) acute necrosis (hemorrhagic or gangrenous), (2) subacute or chronic pancreatitis, (3) pancreatic fibrosis, and (4) collapse or atrophy of the acinar pancreatic tissue. The latter, acinar atrophy which is to be discussed here, is characterized by a dejected patient with a large abdomen and a voluminous, loose, foamy, and fatty stool. Coprophagy is not uncommon and blood sugar determinations remain within the normal ranges. The pancreas is pink, of normal length and location but reduced in thickness and width.

It is believed[1] that blockage of the duct system by metaplasia of the epithelium lining the smaller ducts, carcinoma of the pancreas, tuberculosis of the pancreas, or congenital anomalies may cause acinar atrophy. The most probable cause of pancreatitis in man is the repeated entry of mildly infected bile into the pancreatic duct.[3]

The canine pancreas has two ducts; the major one known as the duct of Santorini, the minor one known as the duct of Wirsung. Spontaneous blockage of both of these ducts has not been observed in dogs and reflux of bile is physically improbable in the dog.[8]

A simple diagnostic test for the absence of trypsin in the feces, utilizing radiographic paper, has been described.[5,6] This test has not been found reliable in this veterinary clinic. A vitamin A-absorption test,[3] is based on the principle that the vitamin A in oleum percomorphum can be absorbed from the intestine only in the presence of pancreatic lipase.

A case of pancreatogenic fatty diarrhea, in a nondiabetic, 2-year-old dog, has been reported.[10] The pancreas was a thin reddish brown strip but the islands of Langerhans were apparently normal. It was interpreted as a case of atrophy of the acinar tissue. A similar case was reported[7] in a young pup 4 months old. The condition was successfully controlled with the result that excess fat disappeared from the stool when the dog was given horse meat, whole wheat bread, and skim milk plus two enteric-coated pancreatin tablets once a day.[2]

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CASE HISTORY

On Nov. 10, 1956, a 13-lb. female dog of mixed breeding, 18 months old, was brought to the clinic chiefly because of an involuntary extrusion of greaselike material from the anus, unassociated with any bowel movement. This condition had persisted for the last six months.

The temperature, pulse, and respiration were normal and remained so. The dog had a voracious appetite but remained emaciated; there was no evidence of abdominal pain. The stools were voluminous, slate gray to soft clay colored, and had a greasy appearance. The feces were negative for parasitic ova, but contained a large amount of fat. Nothing abnormal was found on blood and urine analysis; nor in radiographs of the intestinal tract, except for a large amount of gas. A histoplasmin skin test was negative.

For five weeks the dog was treated with various agents, including extracts of pancreas designed to aid metabolism when pancreatic function is deficient. Various dietary changes were also made, including the use of special preparations of carbohydrates, proteins, and fats as basic, easily-digested dextrose, protolysate, and lipomuloral. During this period, a laparotomy revealed a fatty metamorphosis of the liver and a thin, almost transparent, atrophic pancreas. Microscopically, biopsy specimens of the pancreas showed noninflammatory acinar atrophy (fig 1).

Since this treatment had resulted in little improvement, it was changed to a diet of meal, meat, and broth, including whole dried pancreas (Viokase).[9] During a week of trial treatment the stools remained

dark, semisolid to solid, and the contents seemed to be digested. The dog was then sent home weighing 17 lb. (a gain of 4 lb.), and placed on a 700-calorie daily ration of horse meat, kibble, and milk, plus 20 gr. of the dried pancreas. A month later, it was reported that the dog continued to gain weight.

DISCUSSION

Atrophy of the glandular tissue reduces pancreatic secretion of amylase, trypsin, and lipase. Nearly all the disaccharides may be digested without the aid of pancreatic secretions by means of a small amount of ptyalin in the saliva and a considerable amount of amylolytic enzyme found in the intestinal juice.[5] Intestinal disaccharide ferments (sucrase, maltase, and lactase) act specifically on the corresponding substrates to convert them into monosaccharides. Intestinal peptidases break down peptones and proteoses that escape the pancreatic ferment.

Bile salts (sodium glycocholate and taurocholate) form soluble complexes with fatty acids to facilitate absorption. Also, they activate pancreatic lipase and gastric lipase and aid in the absorption of fat-soluble vitamins.[1]

Lack of pancreatic secretion results in marked changes in the feces which become voluminous, soft, and gray, with a characteristic fatty gloss. A deficiency of pancreatic lipase probably allows a fat coating to surround the carbohydrate particles, thus preventing enzymatic contact and accounting for increased quantities of carbohydrates found in the stool.

Pancreatic enzymes are destroyed or inactivated in an acid medium and gastric pH is capable of such destruction. Any pancreatic product fed before a meal will be inactivated unless the product is enteric-coated or laminated; the first product that we used was not prepared in such a manner. When any food enters the stomach, there is a partial neutralization of the gastric acidity, resulting in a tendency for the pH to rise. When pancreatic extract is included with the food, it is more likely to be unharmed when it reaches the small intestine where it can act. When whole pancreas is fed, a larger amount of the material is probably necessary to assure sufficient activity for intestinal digestion. Pretreatment with sodium bicarbonate would neutralize the gastric content, so perhaps this is indicated when pancreatic extract is given orally.

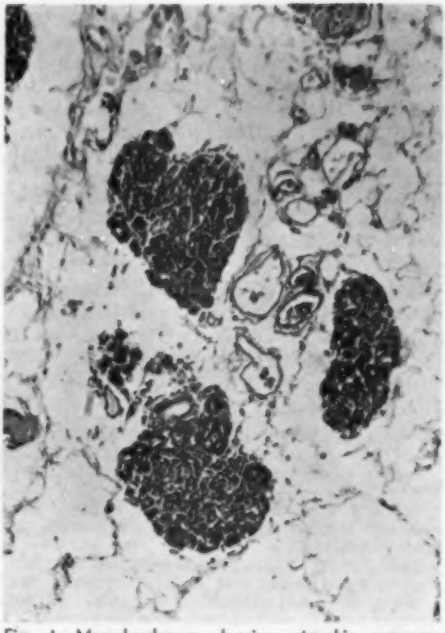

Fig. 1—Mesoduodenum showing atrophic pancreas with solid masses of pancreatic ductuli and some blood vessels placed in a fatty tissue. H & E stain. x 130.

The term "pancreatitis" is incorrect for the entity described above since there are no inflammatory changes. In pancreatitis, there is usually damage to the islets. However, in acinar atrophy, only the acinar cells are destroyed. Grossly, the pancreas is small, firm, and almost completely transparent and the islets are normal but may be somewhat fewer. In addition, the liver generally shows a marked fatty metamorphosis.

Islet cells are apparently more resistant than the acinar tissue. In experimental progressive atrophy, due to ligation of both ducts, islets remain unaffected while the acinar tissue degenerates.[8] Any blockage of the ducts, whether due to tumors, parasites, or calculi, would cause this lesion, but such cases have not been reported in the dog.

A diagnosis of pancreatic acinar atrophy can be based entirely on clinical signs. There is a gradual onset with a voracious

appetite, marked emaciation, and sometimes a moderate diarrhea. The stools are bulky, clay-colored, rancid, and putty-like and contain undigested muscle fibers, fat globules (steatorrhea), and undigested carbohydrates. Bloating and borborygmus may be present, but signs of diabetes are absent. Cachexia is present, regardless of the degree of polyphagia.

SUMMARY

The condition of a young, 13-lb. dog with pancreatic acinar atrophy and intact islet cells was improved by daily feeding of 10 to 20 gr. of whole dried pancreas (Viokase) with a 700-calorie ration of horse meat, kibble, and milk. The dog's bulky, clay-colored, greasy stools returned to normal and its weight increased.

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Screwworm Eradication Test in Florida.—A field test to determine whether screwworms can be eradicated has been started in a 2,000-square mile area southeast of Orlando, Fla. The technique that succeeded on the island of Curacao, in 1954, will be used. Male screwworm flies will be sterilized by subjecting the hard-coated pupae to irradiation by *gamma* rays from radioactive cobalt about two days before they develop into flies. About 2 million of these laboratory-treated flies, about half of them males, will be released from airplanes at 1,000 ft. altitude, in a pattern of about 500 males per square mile. Since the female flies mate only once, the eggs of those thus mated will be infertile. This procedure will continue for four months.

About 80 to 85 per cent of all wounds in cattle in Florida, in the past 11 months, have been attacked by screwworms, causing losses estimated at $10 million. To treat the entire affected southeastern area, which also includes parts of South Carolina, Georgia, and Alabama, would require 50 million sterile flies per week and would have to be continued for at least two years at a total cost of $9 to $10 million. Inspections, quarantines, and stand-by facilities to prevent reinfection would probably cost an additional $750,000 annually. Eradication of screwworms in the southwestern states is not considered feasible because of perennial reinvasion from Mexico.—*U.S.D.A., May 7, 1957.*

Fowl Mite Control with Malathion.—Hens with heavy infestations of the northern fowl mite, at the University of California, were completely protected for approximately 30 days after one application of malathion either as a dust (0.36 Gm. of 1.5%), or by one application of a spray (0.5%), at the rate of 1 gal./100 hens, either as a suspension or an emulsion. There were no signs of toxicity at this dosage.—*Poult. Sci. (March, 1957): 252.*

Leptospirosis in Horses.—Five horses with *Leptospira pomona* infection, in Europe, showed fever, photophobia, somnolence, icteric conjunctivae, episcleral vascular injection, and 2 animals had eye lesions resembling acute periodic ophthalmia. All reacted to the agglutination-lysis test for *L. pomona* and the organism was isolated from the blood of 1 horse. Penicillin therapy was ineffective but all horses recovered.—*Vet. Bull. (April, 1957): Item 1026.*

Anemia in Baby Pigs.—A low molecular dextran-iron compound for the prevention and treatment of anemia in baby pigs, the result of research in England, has been made available to veterinarians. The product (Armidexan) is injected intramuscularly—a 2-cc. dose contains 100 mg. of iron.—*Armour Co. Release, Feb. 12, 1957.*

Practical Measurement of the pH of Rumen Fluid

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Numerous research articles[1-13] on the pH of rumen contents have been published. At least some of the rumen dysfunctions of cattle and sheep are associated with fairly specific changes in rumen pH. For example, a sudden change in ration, from hay to grain, may reduce rumen pH from its normal slight acidity (approx. 6.8 pH) to a much greater acidity (4 to 5 pH) with loss of motility of the organ. At the other extreme, an intake of too much urea may result in highly alkaline (8.0 to 8.5 pH) rumen contents with loss of motility also. Medication of a highly alkaline or antiacid nature, such as magnesium hydroxide or sodium bicarbonate, should not be selected to treat so-called "urea poisoning." If the rumen contents are already too acid, such acid-producing substances as molasses, sugar, or starchy grains should not be introduced into the rumen. Certainly, practical determinations of pH of rumen contents of sick animals will allow better selection of therapy.

It is possible to determine the pH of rumen contents by a simple practical procedure. The equipment necessary is illustrated in the accompanying photograph (fig. 1). The 12-gauge, 4-½ inch needle is inserted with a quick thrust through the abdominal wall of the left flank into the rumen. The 17-gauge, 24-inch collecting tube is introduced into the rumen cavity by passing it through the 12-gauge needle. A small sample of rumen fluid is drawn into a syringe attached to the 17-gauge collecting tube. A drop or two of the fluid is placed upon a small strip of pH paper and its color compared with the colors on the pH paper dispenser which represent known ranges from pH 2 to 12.

The only nonstandard item necessary is the 24-inch, 17-gauge collecting tube. This size of stainless tubing can be obtained through the manufacturers of hypodermic needles, who can also install a needle lock hub. The pH papers can be procured from any laboratory supply house.

Fig. 1—The equipment necessary to determine the pH of rumen contents includes needle, syringe, pH paper and dispenser, and collecting tube (top).

From the Department of Veterinary Science, University of Wisconsin, Madison. Published with the approval of the director of the Wisconsin Agricultural Experiment Station, as paper No. N. S. 220.

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Feeding Thyroprotein to Cows

High milk production is associated with high activity of the thyroid gland. Activity of the thyroid gland is, to a degree, regulated by the hormone it produces so, if the thyroxin requirement is supplied from other sources, the thyroid gland reduces its output to keep the total hormone available unchanged. This causes the gland to become inactive and the animal to be dependent upon the exogenous source. If the hormone activity is above normal, the increased metabolism requires an increase in nutrient intake to maintain body weight. Also, if milk production is increased when iodionated casein (thyroprotein) is fed, a further increase in nutrients is required. Thus, the economic gain from increased milk production may be canceled by the cost of the drug and the increased feed required, plus the lost value in body weight.

An extensive test was conducted in Great Britain over a period of three years, on 37 dairy herds totaling 2,335 cows. When thyroid stimulants were fed, starting 12 weeks after calving, and continued for eight weeks, then gradually reduced and discontinued 11 weeks later, it did not influence the general health of the animals but digestive disorders, parturient paresis, and hypomagnesemia later increased. Milk production was increased in the older cows but, contrary to most studies, the fat content of milk was not increased.

Tests in the United States had previously indicated that there was no increase in milk over the entire lactation period because of the reduced production when the stimulant was discontinued. There was also a significant increase of mortality in calves born to treated cows. A study with four sets of identical twin cows, with 1 twin as a control, showed an increase in comparative milk production in only 1 of the 4 treated cows.

These and other data support the following conclusions: Thyroprotein can be fed over several lactations without injury; it stimulates an initial increase in milk production and fat tests in older cows; the digestible nutrient allowance should be increased by 25 per cent when thyroproteins are fed.—*Feeds Illus. (April, 1957): 52.*

Incoordination in Lambs of Ewes Fed Pea Vine Silage.—Cerebellar ataxia occurred regularly (1 exception) when ewes were fed pea vine silage, made from canning peas, for a few weeks prepartum and during lactation. The lambs appeared normal at birth but showed incoordination when 1 to 3 days old. After one to two minutes of exercise, they would sink to the ground in apparent exhaustion but, after three to five minutes rest, would appear normal until again forced to exercise. The ataxia gradually decreased as they became older. If confined, they develop normally.

On necropsy, no changes were found except in the central nervous system, where there was degeneration of the Purkinje cells of the cerebellum, vacuolar degeneration of certain neurons in the cerebrum and in the distal portions of the spinal cord, and swelling of a few neurons. The condition occurred in four breeds tested and was not prevented by feeding minerals or vitamins A, D, and E to the ewes or by intramuscular injections of calcium pantothenate or thiamine to the lambs.—*Canad. J. Comp. Med. and Vet. Sci. (March, 1957): 77.*

Response of Swine Fed Stilbestrol.—No consistent stimulation of growth had resulted in pigs when stilbestrol pellets were implanted subcutaneously. When pigs weighing 35 to 46 lb. were fed various combinations of high level stilbestrol and antibiotics, at the University of Georgia, there was always a consistent growth response to the antibiotics, and there was an increased response in one experiment when stilbestrol was added but no additional response in the other two experiments. Feeding stilbestrol had no consistent growth-stimulating effect.—*J. Anim. Sci., Feb., 1957.*

Animal Health and Veterinary Services

Advertising and merchandising programs of some segments of the pharmaceutical-biological industries have caused veterinarians to shy away from the term "animal health" with reference to their own services in that field. This is because the term was appropriated some years ago by segments of those industries which market their products direct to livestock owners through wholesale and retail drug outlets; also to promote the "do-it-yourself" treatment of animal diseases.

Yet, when faced with disease in or injury to their animals, most livestock and pet owners think in terms of veterinary services needed to restore their animals to health and to profitable production.

Actually, "animal health" is the basic responsibility of those who are professionally trained and legally qualified in animal disease diagnosis, treatment, and control, *i.e.*, graduate licensed veterinarians. It is the responsibility of the pharmaceutical and biological industries only in so far as their proved and approved products are of value in the hands of persons specifically trained to use them.

Recent events have brought this situation into sharper focus. The Animal Health Institute, an organization representing "leading members of the animal health product industry," launched a wide-scale publicity and advertising campaign last spring which designated April as "Animal Health Month." The promotion was handled by a Chicago advertising firm and comprised, among other things, letters to the editors of the farm and livestock press, drug trade magazines, and commercial house organs, urging that these publications feature special articles on "animal health" in their April issues.

This promotion was viewed with some apprehension by veterinarians, particularly as to its potential effects on the farm and livestock press. A review of what happened has largely dissipated the apprehension, and should relieve any doubts in the minds of veterinarians as to recognition and appreciation of their services in "animal health" matters.

Editorial comments and feature articles appeared in most of the leading agricultural publications. By and large, their emphasis was on the *veterinary service* aspects of livestock health and not on the "animal health products industry" angle. Following are examples of how some of the leading agricultural publications handled the subject in their April issues.

As Others See Us

Hoard's Dairyman (circulation 327,718) said: "April is Animal Health Month. It is appropriate then to feature our veterinary editor, Dr. E. A. Woelffer, as he prepares to vaccinate a 6-months old Jersey heifer. . . ." The lead article in the same issue, "A Dairyman's Best Friend," was written by an Iowa dairy farmer and is a fine tribute to the practicing veterinarian —the fellow who knows animals so well that he "is somehow able to fool the (suspicious) cows."

Western Dairy Journal (circulation 25,000)—The cover shows a picture of a veterinarian drawing a blood sample and the feature article is entitled "Good Herd Health Is No Accident."

Progressive Farmer (circulation 1,326,184)—an editorial on Animal Health Month said in part: "Think of your veterinarian as a counsellor, just as you do your medical doctor. When new products for promoting animal health come on the market, talk them over with him."

Breeder's Gazette (circulation 190,000) —Dr. T. J. Stearns, a former state veterinarian of Kentucky, is featured both on the cover and in an article, "Man with a $100,000,000 Satchel."

In addition, the April issue carried an article on veterinary education by Brian Forster, of the AVMA public relations department, as a guide to precollege students interested in becoming veterinarians, and one on hog cholera eradication by Dr. S. H. McNutt of the University of Wisconsin.

The Ohio Farmer (circulation 156,449) —The issue of April 20, 1957, was devoted almost exclusively to the role of veterinary medicine in animal health. The cover page shows a local veterinarian planning herd health with the owner; articles on "New Tools to Keep Them Healthy," "Leptospirosis," "Team Effort Against Livestock Disease," " 'Farm Vet'— Guardian of Animal Health," and an editorial on "More

Money with Healthy Livestock" make this truly a veterinary issue.

A columnist used an anecdote on do-it-yourself treatment that is worth repeating: "In connection with home treatment, I always think of a cure for weak lambs that I heard about. Whiskey is the remedy and this is the way to use it. Put the weak lambs in a box behind the stove, draw up a chair on the other side of the stove, and sample the whiskey to see if it is of proper strength. Sample it again, if necessary, and in about two hours you can just stop worrying about weak lambs."

These are representative of the total farm press reaction to Animal Health Month. As expected, a number of drug trade magazines emphasized and illustrated the druggists' use of the Animal Health Institute materials to feature their animal health products, representing druggists as capable counsellors on animal disease conditions and purveyors of a complete line of veterinary drugs and instruments.

Possibly we are not in a good position to judge the end result of the April Animal Health Month promotion. However, evidence available to date shows that veterinary service got the major share of the praise. This was highlighted by the presentation of a Distinguished Service Research Award to Dr. B. T. Simms, assistant administrator for Production Research, U.S.D.A., by the Animal Health Institute.

The effect which paid advertising of proprietary products and within-industry promotion of these products has on public opinion and motivation is difficult to measure.

However, if the reaction of farm editors reflects the views of a substantial number of livestock owners, it is quite clear that veterinarians are looked to for leadership in animal health matters.

Our Responsibility

Obviously, the major responsibility for animal disease prevention, diagnosis, treatment, and control rests with veterinarians, but some have been reluctant to assume leadership in the animal health field either because they have felt it might identify them with the Animal Health Institute type of promotion, or that it would require them to use a similar type of commercialism, resulting in a disservice to the livestock industry.

However, animal owners apparently understand the basic health factors better than we have realized.

People who think independently, such as successful livestock farmers, are not easily impressed with high-pressure advertising tactics, especially when an attempt is made to drive a wedge between them and their trusted associates. When that associate is the veterinarian who has demonstrated his over-all knowledge of livestock problems (those of health as well as of disease) and who has been taken into their full confidence, as is the family doctor, the wedge usually does not get far.

On the other hand, laymen generally are not impressed by educational degrees or licenses—they agree with Bobbie Burns who said "The rank is but the guinea's stamp, the man's the [gold] for a' that." Therefore, the practitioner has to earn the confidence of his clients by superior, sympathetic services. That many have done so would seem to be indicated by this response of the agricultural press.

The need of owners for animal health programs can not be wrapped up in an "annual" commemorative celebration; it is a continuous process.

The favorable farm press response brings an object lesson in public relations. It could be construed as the happy result of the AVMA's 20-year public relations program, directed toward the farm front. Certainly this and the effective publicity efforts of the Associated Veterinary Laboratories, Inc., and others, have been beneficial, but in the final analysis it is chiefly a tribute to the practitioners who are on the firing line where public relations actually are established.

This encouragement increases the responsibility for those in all phases of veterinary medicine to improve both the quality and the constancy of their services. We have profited from the examples set and the good will created by the conscientious, 24-hour-a-day service provided by the trail blazers in our profession. We can continue to profit from our research, both independent and organized, and from the exchange of ideas and information. But whether we continue to rate public respect and confidence depends chiefly on each individual's success in giving selfless service to the public.

ABSTRACTS

Clearing Agents for Staining Semen Smears

Studies were made of a large number of chemicals to determine their utility as clearing agents for semen smears. Satisfactory staining results were obtained with 0.5 to 1.0 per cent aqueous solutions of sodium or potassium hydroxide for five to ten seconds; 1.0 to 2.5 per cent aqueous solutions of sodium or potassium carbonate or bicarbonate, disodium or trisodium phosphate, and sodium hexametaphosphate for ten to 15 seconds; 1.0 per cent sodium silicate for ten to 15 seconds; and saturated aqueous solutions of calcium hypochloride, chloramine T, and chlorazene for ten to 15 seconds. Semen smears so cleared gave excellent sperm staining, with powerful basic stains such as Ziehl's carbol fuchsin and carbol crystal violet, without any of the background staining.

Studies were undertaken to complete clearing and staining in one process either by flooding the smear with the clearing agent followed immediately by adding the requisite quantity of the stain and allowing the mixture to act, or by mixing the two in a test tube and pouring on the smear. With both techniques, satisfactory results were obtained.

Clearing agents did not intensify the staining reaction of sperm when this quality was studied by using acid stains such as erythrosin and aniline blue, with uncleared stained slides as controls.—[*C. Krishna Rao: Use of Clearing Agents in Staining Semen Smears. Am. J. Vet. Res., 18, (April, 1957): 441-444.*]

Investigation into the Lung Mite Life Cycle

Necropsies of 600 *Macaca mulatta* monkeys revealed pulmonary infection with the lung mite, *Pneumonyssus foxi*, without exception. A study to determine if transplacental transfer of this lung mite occurs in the monkey indicated that such transfer is unlikely to occur in the life cycle of *P. foxie.*—[*Benjamin D. Fremming, Milford D. Harris, Jr., Robert J. Young, and Richard E. Benson: Preliminary Investigation into The Lung Mite Life Cycle (Pneumonyssus Foxi). Am. J. Vet. Res., 18, (April, 1957): 427-428.*]

Bromsulphalein Clearance in the Horse

Bromsulphalein (BSP) mean fractional clearance from the serum in the horse between five and 12 minutes after its intravenous injection is 0.255 ± 0.05. The mean half-time for BSP disappearance from the serum is 2.81 ± 0.5 minutes. By extrapolating the semilog plot of dye disappearance to zero time, the plasma volume can be estimated. Variation in the quantity of BSP injected between 1.5 mg. per kilogram and 6.3 mg. per kilogram does not alter the fractional clearance. Significant quantities of BSP appeared in the bile 12 minutes after its intravenous injection. Hospitalized horses with confirmed diffuse liver disease exhibited decreased fractional clearances (increased half-times).—[*C. E. Cornelius and J. D. Wheat: Bromsulphalein Clearance in the Horse—A Quantitative Liver Function Test. Am. J. Vet. Res., 18, (April, 1957): 369-374.*]

"Atomized" Distemper Vaccine of Avian Origin

An "atomized" dust distemper vaccine of avian origin failed to protect ferrets under conditions similar to those which would be used in the field. In contrast, an atomized aqueous vaccine was repeatedly found successful. The success of this latter method, however, depends largely on the size of the mist particle; a fine nebulizer consistently afforded 100 per cent protection, while a coarser sprayer immunized only 50 per cent of the animals.

The complement-fixation (CF) method was found to be a valuable tool for measuring the immune response of mink to the same atomized aqueous distemper vaccine; 59 per cent of animals vaccinated by that method under somewhat adverse conditions developed distemper CF antibodies.—[*V. J. Cabasso, D. W. Johnson, M. R. Stebbins, and H. R. Cox: "Atomized" Distemper Vaccine of Avian Origin. I. Experimental Immunization of Ferrets and Mink. Am. J. Vet. Res., 18, (April, 1957): 414-418.*]

Newcastle Disease Vaccines for Broilers and Caponettes

The immunity that developed from using three types of commercial Newcastle disease vaccine was compared in six groups containing 340 parentally-immunized chickens.

Vaccination response was determined by the *beta* hemagglutination-inhibition (HI) test and by intratracheal challenge. The chickens challenged intratracheally were given 0.25 ml. of the G.B. strain of Newcastle disease virus. Its titer in embryonating eggs was 10^{-9} e.l.d.$_{50}$. Immunity was measured by the appearance of paralysis or death, or both.

In the group of 50 birds that received one dose of water vaccine (Lasota strain) at 5 days of age, 18 per cent were HI positive and 28 per cent were resistant to challenge at the end of 12 weeks. The result of revaccination of 50 birds at 4 weeks of age showed that 76 per cent were HI positive and 94 per cent were resistant at the end of 15 weeks. Of the 50 birds that were given one dose of dust vaccine (B_1 strain) at 5 days old, 68 per cent had HI antibodies and 70 per cent were resistant at the end of 12 weeks. All of the 50 birds that were revaccinated with dust at 4 weeks were resistant, and 96 per cent had HI antibodies at the end of 15 weeks. In the group of 70 birds that were vaccinated with formalin-inactivated aluminum hydroxide-adsorbed Newcastle disease vaccine (California strain 11914) at 10 days of age, 100 per cent of

the birds had HI antibodies, and 98.6 per cent resisted challenge at the end of 16 weeks. None of the 70 birds in the control group showed any evidence of HI antibodies or immunity.

The water and dust vaccine virus strains survived in the chicken environment for 36 and 24 hours, respectively. The serum from 5-day-old chicks neutralized 100 units of G.B. Newcastle disease virus.—[*A. H. Dardiri, P. W. Chang, and D. E. Fry: Immunity Study of Three Types of Newcastle Disease Vaccines for Broilers and Caponettes. Am. J. Vet. Res., 18, (April, 1957): 400-404.*]

Anthelmintics for Oxyurids in Mice

Stylomycin was nontoxic and was the most effective of the anthelmintics tested for the removal of *Aspicularis tetraptera* from the colon and *Syphacia obvelata* from the cecum of mice, eliminating 98.1 per cent of the pinworms (uncorrected av. efficacy). Phenothiazine was 70.1 per cent effective for the removal of worms from the mice.

Parvex, pipcide, piperazine adipate, aminonucleoside of stylomycin, and cadmium anthranilate were not as effective as stylomycin and phenothiazine in the elimination of oxyurids from mice, expelling only 44.04, 11.7, 50.4, 44.8, and 55.3 per cent, respectively; but, when compared with the worm removal of the control group (13.1%), there appeared to be some evidence of anthelmintic action.

Stylomycin was not effective for the removal of *Hymenolepis* spp. from mice.—[*Fletcher P. Williams and Robert T. Habermann: An Evaluation of the Efficacy of Stylomycin Phenothiazine, Cadmium Anthranilate, and the Piperazine Compounds for the Removal of Oxyurids in Mice. Am. J. Vet. Res., 18, (April, 1957): 429-431.*]

Common Infections in Monkeys

Gross and microscopic findings, at necropsy, indicate that the principal causes of death in 615 rhesus monkeys were: enteritis, 291 (47.3 %); tuberculosis, 312 (21.5%); pneumonia, 86 (14.0 %); and parasitism, 17 (3.2%). In 93 cynomolgus monkeys, the causes were enteritis, 50 (53.8%); pneumonia, 27 (29.0%); tuberculosis, 0 (3 reactors); and parasitism, 3 (3.7%).

Salmonella spp. were isolated from 41 (14.9%) and Shigella spp. from 28 (10.2%) of 275 fecal samples from rhesus monkeys. Salmonella enteritidis was isolated from 1 (4.3%) of 28 fecal samples of cynomolgus monkeys.

The species of Salmonella isolated from 41 infected rhesus monkeys were *S. typhimurium*, 16; *S. enteritidis*, 14; *S. stanley*, 5; *S. san diego*, 2; *S. anatum*, 2; *S. bareilly*, 1; *and S. braenderup*, 1. The species of Shigella isolated from 28 infected rhesus monkeys were *S. flexneri* 2a, 15; *S.* 4a, 6; *S.* 4b, 5; *S.* 6b, 1; and *S.* 4a and 4b, 1.

The number of fecal examinations positive for positive nematode eggs, from 530 necropsied rhesus monkeys, were: Taenia spp., 3 (0.6%); Strongyloides sp., 129 (24.3%); and Oesophagostomum spp., 71 (13.4%). Fecal examinations of 82 cynomolgus monkeys showed Strongyloides sp. in 6 (7.3%) and Oesophagostomum spp. in 4 (4.9%).

Microscopic examinations of tissues from 370 rhesus monkeys revealed abscesses of the submucosa and serosa of the cecum and colon caused by larvae of Oesophagostomum spp. in 12 (3.2%). *Pneumonyssus simicola*, liver fluke not identified, *Capillaria hepatica*, Balantidium spp., and *Sarcocystis kortei* were also found.

Clonorchis sinensis was the only parasite found microscopically in 60 cynomolgus monkeys. Giant cell pneumonia with intranuclear and cytoplasmic inclusion bodies was seen in 2 cynomolgus monkeys. Corpora calcificans were seen in the adrenals of 23 (6.2%) of the rhesus monkeys. No neoplasms were observed.—[*Robert T. Habermann and Fletcher P. Williams, Jr.: Diseases Seen at Necropsy of 708 Macaca Mulatta (Rhesus Monkey) and Macaca Philippinensis (Cynomolgus Monkey). Am. J. Vet. Res., 18, (April, 1957): 419-426.*]

BOOKS AND REPORTS

Defense Against Radioactive Fall-Out on the Farm

This bulletin was prepared by the U. S. Department of Agriculture in cooperation with the Atomic Energy Commission, the Federal Civil Defense Administration, and the U. S. Public Health Service. It deals with radioactive contamination conditions that may exist following the explosion of nuclear weapons during war.

Its contents include background information on fall-out; its possible effects on livestock, both unprotected and sheltered; and on lands and crops; as well as many pointers on protection from fall-out.

Study of the effect of radioactive fall-out on agriculture is a continuing project, the bulletin says, and some of the recommendations in it may have to be changed in the light of further research.

A number of scientists, engineers, public health officials, and others collaborated in preparation of the bulletin: Dr. Frank A. Todd, assistant to the administrator, Agricultural Research Service, U.S.D.A., and a member of the National Advisory Council on Rural Civil Defense, was largely responsible for coordinating the material.—[*Defense Against Radioactive Fallout on the Farm—Farmers Bulletin No. 2107. U. S. Government Printing Office, Washington 25, D. C. 1957. Price 10 cents.*]—J. G. HARDENBERGH.

THE NEWS

Guam Government Seeking Veterinarian

The government of Guam is again seeking the services of a veterinarian (graduate of an approved school) with varied experience in practice and animal husbandry. Salary for the position starts at $7,475 with a maximum of $9,360 per annum. A two-year contract is offered subject to renewal.

Interested applicants should write airmail to Mr. Peter C. Siguenza, Director of Personnel, Government of Guam, Agana, Guam.

Transportation of the selected applicant is at government of Guam expense; furnished housing is provided at reasonable rental. Leave allowances are provided and there is opportunity for the person and his family to tour the Orient, Middle East, and Europe on return home upon completion of his contract.

AMONG THE STATES AND PROVINCES

Colorado

Dr. Frandson Honored.—At the annual honor night program held at Colorado State University on May 20, 1957, Dr. Rown D. Frandson and Professor Hubert W. Collins received the "Top Prof Awards" awarded each year to two outstanding instructors at the University.

Dr. Frandson is associate professor of veterinary anatomy in the College of Veterinary Medicine and Mr. Collins is professor of civil engineering in the College of Engineering.

A year ago, Dr. Rue Jensen, dean of the College of Veterinary Medicine, C.S.U., was honored as one of the two outstanding instructors among the 400 faculty members at the University.

Another award this year went to Kenneth M. Goddard, senior veterinary student of Greeley, who received the Borden Scholarship awarded each year to the veterinary student with the highest average grades during the freshman, sophomore, and junior years.

Other veterinary students receiving honors were the following who were designated as Phi Kappa Phi initiates: Raymond T. Jackson, Lakewood, Colo.; Robert C. Kreycik, Wood Lake, Neb.; William J. Tetz, Jr., Hinsdale, Ill.; Milo S. Willis, Fort Collins, Colo.; and Clarence R. Herbrandson, Alcester, S. Dak.

Kansas

Conference on Anaplasmosis.—The third national research conference on anaplasmosis in cattle was held at Kansas State College June 12-13.

The meeting was devoted to a general program for research, regulatory, and diagnostic personnel, with investigators reporting on the latest findings and research progress.

Pennsylvania

Animal Disease Conference.—A conference on "The Responsibility of Regulatory Veterinarians in Human and Animal Health" was held at the School of Veterinary Medicine, University of Pennsylvania, May 24, 1957.

The subject matter emphasized the control of those animal diseases transmissible to man and the role of veterinarians in civilian defense.

Dr. Edwin D. Tuckerman, assistant professor of regulatory veterinary medicine, School of Veterinary Medicine, University of Pennsylvania, served as chairman of the conference.

Quebec

Provincial Association.—The annual meeting of the Association of Microbiology of the Province of Quebec was held recently at the University of Montreal. After the scientific session, the following members were elected to the Executive Board: Drs. Paul Genest, president; R. W. Reed and V. Fredette, vice-presidents; M. Vincent Portelance, secretary; and J. M. Desranleau, treasurer.

The Association has more than 150 members, although it is only five years old. It is affiliated with the Canadian Association of Microbiologists.

Georgia

Leaders of the Georgia Veterinary Medical Association joined the Public Health Service's Communicable Disease Center at Atlanta recently in a program designed to show the value of high egg passage (HEP) rabies vaccine in protecting high risk groups against the disease. Dr. Clay C. Von Gremp, president of the Georgia V.M.A., is shown here receiving an injection of the vaccine from Dr. Thomas A. Engle, officer in charge of the CDC Medical-Dental Clinic. Drs. James L. Johenning and D. C. Ford, practicing veterinarians in the Atlantic area, and James H. Steele (rear), chief veterinarian of CDC, are the observers.

Texas

Veterinary Student Valedictorian at Texas A. & M.—Wallace L. Kleb, senior veterinary student, was named valedictorian of the graduating class at Texas A. & M. College. While at Texas A. & M., Dr. Kleb maintained a grade point average of 2.9819 out of a possible 3.0. He is a member of Phi Eta Sigma, Phi Zeta, and Phi Kappa Phi.

FOREIGN NEWS

Chile

Society of Veterinary Medicine.—The second biennial meeting of the Society of Veterinary Medicine of Chile was held in Valparaiso Nov. 2-4, 1956. Approximately 120 veterinarians of Chile attended the convention.

In attendance at the convention were (left to right)—Drs. O. Bastias, president of the Chilean Society of Veterinary Medicine; L. Flores, president of the convention; R. Tapia, secretary of the convention; R. Oyarzun, reading; and A. Skoknic, assistant secretary.

The program for the meeting included presentations on animal production and animal disease control topics.

Germany

Conference on Reproductive Diseases of Animals.—The Second Congress on Reproductive Diseases of Animals met in Bad Nauheim, Germany, April 5-7, 1957. The program of the three-day meeting included scientific papers on

Dr. Martin Lerche

brucellosis, fetal pathology, biopsies of the uterus, *Vibrio fetus,* and other genital infections and allied subjects. Over 500 veterinarians from eight European countries attended this conference. Professor Dr. Martin Lerche of the veterinary faculty of the Free University of Berlin is president of the Congress.

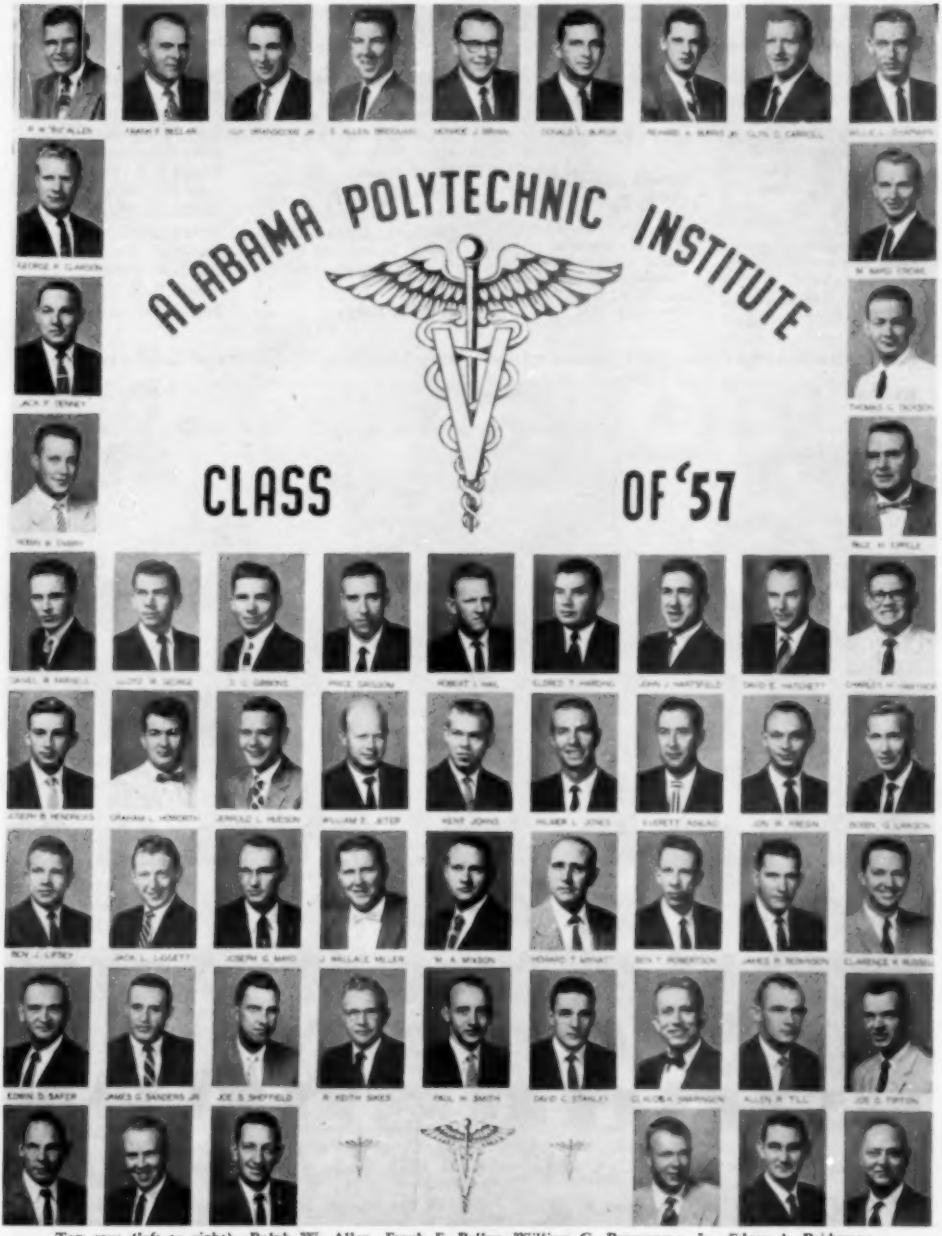
COMMENCEMENTS

Alabama Polytechnic Institute.—At the 1957 commencement exercises of the School of Veterinary Medicine, Alabama Polytechnic Institute, the following 55 candidates were presented for the D.V.M. degree:

Ralph W. Allen
Frank F. Bellar
William G. Branscome, Jr.
Edgar A. Bridgman
Monroe J. Bryan
Donald L. Burch
Richard A. Burris, Jr.
Glyn O. Carroll
Willie L. Chapman
George R. Clawson
M. Ward Crowe
Jack F. Denney
Thomas G. Dickson
Robin W. Embry
Page M. Eppele
Daniel R. Farnell
Lloyd W. George
Donald C. Gibbons
Charley P. Grimsom
Robert I. Hail
Eldred T. Harding
John J. Hartsfield
David E. Hatchett
Charles H. Hawthorne
Joseph B. Hendricks
Graham L. Howorth
Jerrold L. Hudson
William E. Jeter
Kent Johns
Hilmer L. Jones
Everett Kincaid
Jon W. Kresin
Bobby G. Lawson
Ben J. Lifsey
Jack L. Liggett
Joseph G. Mayo
J. Wallace Miller
Maurice A. Mixson
Howard T. Mynatt
Benjamin T. Robertson, Jr.
James R. Robinson
Edwin D. Safer
James G. Sanders, Jr.
Joe S. Sheffield
R. Keith Sikes
Paul H. Smith
David C. Stanley
Claude K. Swaringen
Allen R. Till
James G. Turnage, Jr.
Joe T. Turpin
John B. Webb
Warren E. White
James D. Willis
Charles H. Woodley

(See commencement picture on opposite page)

Graduating Class, 1957, School of Veterinary Medicine, Alabama Polytechnic Institute



Top row (left to right)—Ralph W. Allen, Frank F. Bellar, William G. Branscome, Jr., Edgar A. Bridgman, Monroe J. Bryan, Donald L. Burch, Richard A. Burris, Jr., Glyn O. Carroll, Willie L. Chapman.

Second, third, fourth rows—G. R. Clawson, M. W. Crowe, J. F. Denney, T. G. Dickson, R. W. Embry, P. M. Eppele.

Fifth row—Daniel R. Farnell, Lloyd W. George, Donald C. Gibbons, Charley P. Grissom, Robert I. Hail, Eldred T. Harding, John J. Hartsfield, David E. Hatchett, Charles H. Hawthorne.

Sixth row—Joseph B. Hendricks, Graham L. Howorth, Jerrold L. Hudson, William E. Jeter, Kent Johns, Hilmer L. Jones, Everett Kincaid, Jon W. Kresin, Bobby G. Lawson.

Seventh row—Ben J. Lifsey, Jack L. Liggett, Joseph G. Mayo, J. Wallace Miller, Maurice A. Mixson, Howard T. Mynatt, Benjamin T. Robertson, Jr., James R. Robinson, Clarence K. Russell.

Eighth row—Edwin D. Safer, James G. Sanders, Jr., Joe S. Sheffield, R. Keith Sikes, Paul H. Smith, David C. Stanley, Claude K. Swaringen, Allen R. Till, Joseph D. Tipton.

Ninth row—James G. Turnage, Jr., Joe T. Turpin, J. B. Webb, W. E. White, J. D. Willis, C. H. Woodley.

University of California.—At the 1957 commencement exercises of the School of Veterinary Medicine, University of California, the following 44 candidates were presented for the D.V.M. degree:

Janis M. Ader
John W. Arden
Harvey D. Bailey
Frank E. Bartlett, Jr.
Alon J. Biggers
Alf E. Boman
George H. Bond
Gordon R. Burr
Thomas Burton
Kirby I. Campbell
Gerald M. Clark
Janet R. Sanford
Phillip D. Des Marteau
Harry A. Dingwall
David A. Galbreath
Thomas A. Gould
Harold Z. Hewitt
Edward J. Hill
Ronald W. Humason
Donald E. Hur
Hubert C. Johnstone
Jonathan Kaufmann
Harry W. Kuller
Victor Lammers, Jr.
Robert E. Larson
Robert A. Lindstrom
Charles L. Lippincott
Roy E. Mason, Jr.
Thurmond McWhorter
Edward A. Nevin
Hugh B. Norris
William A. Priester, Jr.
Thomas G. Schauwecker
Arthur W. Selby
John M. Simpkin
Richard G. Squires
Robert E. L. Taylor
Arlie G. Toulouse
William P. Tuttle
Douglas J. Vincent
Horace E. Warner
Eric J. D. West
George B. E. West
Jack E. Winchester

Graduating Class, 1957, School of Veterinary Medicine, University of California

Top row (left to right)—Janis M. Ader, John W. Arden, Harvey D, Bailey, Frank E. Bartlett, Jr.

Second row—Alon J. Biggers, Alf E. Boman, George H. Bond, Gordon R. Burr, Thomas Burton, Kirby I. Campbell.

Third row—Gerald M. Clark, Janet R. Sanford, Phillip D. Des Marteau, Harry A. Dingwall, David A. Galbreath, Thomas A. Gould.

Fourth row—Harold Z. Hewitt, Edward J. Hill, Ronald W. Humason, Donald E. Hur, D. E. Jasper, Dean, Hubert C. Johnstone, Jonathan Kaufmann, Harry W. Kuller, Victor Lammers, Jr.

Fifth row—Robert M. Larson, Robert A. Lindstrom, Charles L. Lippincott, Roy E. Mason, Jr., Thurmond McWhorter, Edward A. Nevin, Hugh B. Norris, William A. Priester, Jr., Thomas G. Schauwecker, Arthur W. Selby.

Sixth row—John M. Simpkin, Richard G. Squires, Robert E. L. Taylor, Arlie G. Toulouse, William P. Tuttle, Douglas J. Vincent, Horace E. Warner, Eric J. D. West, George B. E. West, Jack E. Winchester.

Colorado State University.—At the 1957 commencement exercises of the College of Veterinary Medicine, Colorado State University, the following 60 candidates were presented for the D.V.M. degree:

William L. Amsden
James H. Bailey
Hugh E. Barnes
George M. Beeman
Edward J. Carroll
Gene D. Carter
Robert S. Chaulk
Joseph G. Clark
Gerald B. Conger
Ernest P. Deines
Charles W. Dickie
Donald G. Dunbar
William D. Durio
Valentine P. Farrell
Kenneth A. Gerner
Kenneth M. Goddard
Richard J. Haines, Jr.
Donald M. Henness
Warren L. Hinrichs
Thomas F. Howell
Darrell Ireland
John R. Ipson
Raymond T. Jackson
Charles L. Johnson
Richard K. Johnson
William E. Jones
Gene A. Kalisz
Gordon E. Knorr
Robert C. Kreycik
Charles I. Manners
Marvin O. Maul
Robert E. Miller
Dewey E. Monty
Donald A. Ostwald
Donald L. Owen
Lincoln J. Parkes
Lowell E. Parsons
Enoch M. Pence
Robert A. Policky
John R. Popish
Purl E. Prock
John R. Puckett
Wayne L. Rollins
James A. Scott
Allen R. Shaffer
Ross A. Smart
Vern R. Smith
N. Keith Stewart
Boyd L. Stock
Raymond C. Stofer
Stanley E. Taylor
William J. Tietz
Judson D. Todd
Joe B. Trimble
Clark D. Vanderhoof
Donald O. Wheeler
John W. Whiteley
Robert F. Wilcox
Milo S. Willis
John J. Wolfer

Graduating Class, 1957, College of Veterinary Medicine, Colorado State University

Top row (left to right)—Joe B. Trimble, Stanley E. Taylor, Enoch M. Pence, William L. Amsden, Dewey E. Monty, Joseph G. Clark, Raymond T. Jackson, John J. Wolfer, Vern R. Smith, Valentine P. Farrell, Lowell E. Parsons, Clark D. Vanderhoof, Robert F. Wilcox, John R. Puckett.

Second row—Hugh E. Barnes, Donald O. Wheeler, Paul H. Draper, Robert E. Miller, Charles I. Manners, Gordon E. Knorr, Charles L. Johnson, Richard K. Johnson, Warren L. Hinrichs, James H. Bailey, Judson D. Todd, Thomas F. Howell, William J. Tietz, James A. Scott.

Third row—Charles Wm. Dickie, Gerald B. Conger, Robert C. Kreycik, Allen R. Shaffer, Robert A. Policky, John R. Popish, William E. Jones, Donald G. Dunbar, Lincoln J. Parkes, Boyd L. Stock, Ernest P. Deines, Donald L. Owen.

Fourth row—Wayne L. Rollins, George M. Beeman, Donald A. Ostwald, Marvin O. Maul, Milo S. Willis, Richard J. Haines, Jr., Ross A. Smart, Darrell Ireland, Gene D. Carter, John R. Ipson.

Fifth row—Purl E. Prock, Kenneth A. Gerner, Raymond C. Stofer, Kenneth M. Goddard, N. Keith Stewart, Edward J. Carroll, William D. Durio, Gene A. Kalisz, John W. Whiteley.

Robert S. Chaulk and Donald M. Henness not shown.

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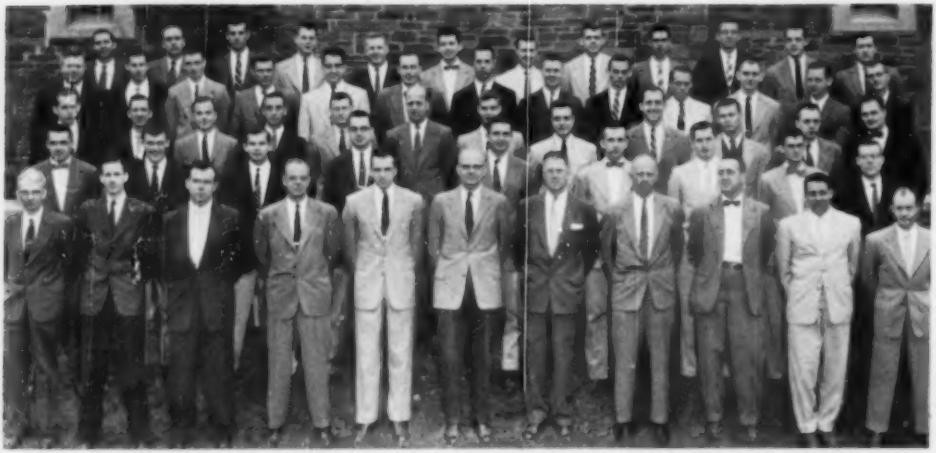
Cornell University.—At the 1957 commencement exercises of the School of Veterinary Medicine, Cornell University, the following 46 candidates were presented for the D.V.M. degree:

Richard J. Abbott
Allan J. Ahearne
William H. Baker
Lewis H. Berman
Gerald A. Bezner
Robert H. Briggs
Clyde S. Card, Jr.
Charles A. Chopay
Stanwood B. Churchill
Paul Corwin
C. Fred Crist
Daniel B. Davis, Jr.
Forrest H. Davis
Henry F. Doerge
Roland B. Fowler
Albert C. Fritz
Ludwig W. Geib
Thomas N. Gorman
Richard C. Grambow
Harry L. Gray, Jr.
William M. Howe
J. D. Hyman
Richard W. Ingalls
John B. Jeffers
Harold A. Jenkins
Elliott M. Katz
Kent T. Kay
William S. Kelley
Eugene T. Kemp
Fred W. Kern
Donald H. Lein
Wesley E. Linquist
James O. Marshall
Robert A. Moore
Thomas C. Murray
Raymond F. Olson
Anthony Palminteri
Ernest Reit
Alvin F. Schwartz
Lawrence M. Sherman
John B. Tasker, Jr.
Robert W. Thomas
Leo J. van Dijk
Alexander H. Walsh, III
Stanley Weissman
Stanley A. Witzel, Jr.

(Cornell University commencement picture on next page)

Graduating Class, 1957, New York State Veterinary College, Cornell University



Top row (left to right)—Harry L. Gray, Standwood B. Churchill, Daniel B. Davis, Jr., William H. Baker, Wesley E. Linquist, Thomas C. Murray, Lawrence M. Sherman, Richard C. Grambow, C. Fred Crist, Stanley A. Witzel, Jr., Robert A. Moore, Gerald A. Bezner.

Second row—Clyde S. Card, Jr., Elliott M. Katz, Richard W. Ingalls, Alvin F. Schwartz, Albert C. Fritz, John B. Tasker, Jr., Anthony Palminteri, John B. Jeffers, Richard J. Abbott, Roland B. Fowler, Eugene T. Kemp, Alexander H. Walsh III, Ludwig W. Geib.

Third row—Henry F. Doerge, Charles A. Chopay, Lewis H. Berman, Jay D. Hyman, Paul Corwin, Raymond F. Olson, Donald H. Lein, Fred W. Kern, Ernest Reit, Allan J. Ahearne, Robert H. Briggs, Harold A. Jenkins.

Fourth row—William S. Kelley, Thomas N. Gorman, James O. Marshall, William M. Howe, Leo J. van Dijk, Robert W. Thomas, Forrest H. Davis, Kent T. Kay, Stanley Weissman.

Fifth row—Drs. A. G. Danks, J. Bentinck-Smith, F. H. Fox, W. A. Hagan, R. W. Kirk, M. G. Fincher, E. P. Leonard, P. Olafson, M. E. Miller, S. J. Roberts, D. D. Delahanty.

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Graduating Class, 1957, School of Veterinary Medicine, Tuskegee Institute

Tuskegee Institute.—At the 1957 commencement exercises of the School of Veterinary Medicine, Tuskegee, Alabama, the following 11 candidates were presented for the D.V.M. degree:

Edward C. Arthur
Joseph L. Belle
La Val N. Cothran
Othello J. Curry
Whit M. Dawkins
William M. Dudley
E. Hernandez Gonzales
Matthew Jenkins
Sidney E. Milburn
Lorraine E. Smith
Robert Williams

• • •

University of Missouri.—At the 1957 commencement exercises of the School of Veterinary Medicine, University of Missouri, the following 29 candidates were presented for the D.V.M. degree:

Walter G. Allen
George T. Barrows
Robert P. Botts
Harold W. Casey
Charles L. Counts
Dallas R. Cramer
James K. Dobbins
Edwin F. Duing
John W. Evans
Matthias P. Genser
Robert E. Grosse
William R. Henry
Cliff Hodges, Jr.
Jack R. Horton
Max W. John
Carl S. Johnson
Gail G. Kroenke
Tommy T. Lee
Garland D. Lindsey
James L. McQueen
Clarence Mabee
William D. Merritt
Eugene A. Mickley
Leonard E. Palmer
Richard T. Riegel
Reed W. Rings
Robert E. Schmoll
Keith Stark
John E. Uren

Graduating Class, 1957, School of Veterinary Medicine, University of Missouri

Top row (left to right)—Walter G. Allen, George T. Barrows, Robert P. Botts, Harold W. Casey, Charles L. Counts, Dallas R. Cramer, James K. Dobbins.

Second row—Edwin F. Duing, John W. Evans, Matthias P. Genser, Robert E. Grosse.

Third row—William R. Henry, Cliff Hodges, Jr., Jack R. Horton, Max W. John.

Fourth row—Carl S. Johnson, Gail G. Kroenke, Tommy T. Lee, Garland D. Lindsey, Clarence E. Mabee, William D. Merritt, Eugene A. Mickley.

Fifth row—James L. McQueen, Leonard E. Palmer, Richard T. Riegel, Reed W. Rings, Robert E. Schmoll, Keith Stark, John E. Uren.

University of Georgia.—At the 1957 commencement exercises of the School of Veterinary Medicine, University of Georgia, the following 53 candidates were presented for the D.V.M. degree:

William D. Allen
John K. Atwell
John M. Bowen
Homer D. Briscoe
Claude W. Carraway
Mike C. Chesson
V. Otho Cline, Jr.
Homer E. Connell, Jr.
Everette A. Corley
Richard B. Davis
A. James Dodds
John H. Durden
Edwin L. Everhart
Slade H. Exley, Jr.
Dennis G. Foster
Tom F. Foster, Jr.
Fred M. Garrett
William E. Greer
Ben D. Harrington
Berlin Harris
Louis B. Hornstein
William L. Huffard
William S. Jackson
Ted L. James
Leonard Kamenetz
William M. Lewis
James R. Lindsey
Frank K. Love
William H. Martin
Ellen J. Maxwell
Robert S. Mouser
Eugene E. Musselmann, Jr.
F. Carlton McMullan
Birch L. McMurray
Glenn R. Noffsinger
Daniel E. Orr
Leslie R. Poe, Jr.
Paul E. Ramsey, Jr.
Roland T. Rogers
George D. Sanders
William K. Settle
Jacob O. Shuler
Walter T. Stinson
Henry D. Stone
Fred H. Swahn
William D. Vaughn
Harry D. Vildibill
James D. Weiss
William E. White
Ford Whitlow
John M. Whittaker
Walter L. Widdowson
James C. Wilkinson

Graduating Class, 1957, School of Veterinary Medicine, University of Georgia

Top row (left to right)—Frank K. Love, Henry D. Stone, Mike C. Chesson, Leonard Kamenetz, Glenn R. Noffsinger, Louis B. Hornstein, Jacob O. Schuler, James C. Wilkinson, E. Carlton McMullan, Fred H. Swahn, Homer D. Briscoe.

Second row—V. Otho Cline, Jr., George D. Sanders, Berlin Harris, William K. Settle, James R. Lindsey, Harry D. Vildibill, James D. Weiss, Richard B. Davis, Everette A. Corley, John M. Bowen.

Third row—Leslie R. Poe, Jr., Slade H. Exley, Jr., Walter L. Widdowson, A. James Dodds, Dennis G. Foster, William D. Allen, Daniel E. Orr, Eugene E. Musselmann, Jr., William E. Greer, Claude W. Carraway.

Fourth row—Birch L. McMurray, Ted L. James, Paul E. Ramsey, Jr., William D. Vaughn, John H. Durden, Ellen J. Maxwell, William L. Huffard, John K. Atwell, William M. Lewis, Ben D. Harrington, Edwin L. Everhart.

Fifth row—Fred M. Garrett, Robert S. Mouser, William E. White, Ford Whitlow, William S. Jackson, William H. Martin, Jr., Homer E. Connell, Jr., Roland T. Rogers, Tom F. Foster, Jr., Walter T. Stinson, John M. Whittaker.

Kansas State College.—At the 1957 commencement exercises of the School of Veterinary Medicine, Kansas State College, the following 59 candidates were presented for the D.V.M. degree:

Robert C. Asmus
Wayne E. Bailie
Richard V. Bennett, Jr.
Richard J. Bergin
James E. Boyd
Harold C. Brecheisen
Thomas F. Burton
Joseph F. Coyle
Brian C. Cummings
Ralph L. Ebers
Phillip F. Eckhart
Robert F. Frank
Wayne M. Frerichs
Wayne G. Gaulke
Theron A. Haufler
Clarence G. Heath
T. Douglas Heath
Franklin J. Heim
Galen L. Heritage
Harry A. Hopson
Glenn E. Hoskinson
L. Keith Huff
Jay M. Humburg
Frederick S. Idtse, Jr.
Larry A. Jackson
James L. Kastens
Leland D. Kendall
Robert E. Kind
Thomas W. Kirkeminde
Richard W. Kohlschreiber
James A. Laughlin
Robert D. Lewis
Gerhard A. Malm
John R. Markley
David E. McKnight
Alvin E. Melcher
Eldon D. Miksch
Gerald J. Miller
Philip D. Moorhead
William J. Murray
Perry W. Page
Jay A. Peterson
Dean A. Price
John G. Ravnikar
Thomas E. Roberts
Jay D. Rush
Charles S. Sackett
Louis E. Schindler
Jerry L. Schrader
Irvin M. Schwalm
Raymond F. Sis
Olen R. Stauffer
Paul O. Thomas
William L. Tilgner
Robert V. VanCamp
Keith Van Steenbergh
Donald L. Wainscott
William G. Wisecup
Max H. Zahner, Jr.

Graduating Class, 1957, School of Veterinary Medicine, Kansas State College

Top row (left to right)—Larry A. Jackson, Richard J. Bergin, Leon K. Huff, Thomas W. Kirkeminde, James E. Boyd, Robert E. Kind, Wayne G. Gaulke, Olen R. Stauffer, Franklin J. Heim, Charles S. Sackett, Jay H. Humburg.

Second row—William L. Tilgner, Richard V. Bennett, Jr., Harold C. Brecheisen, Jay D. Rush.

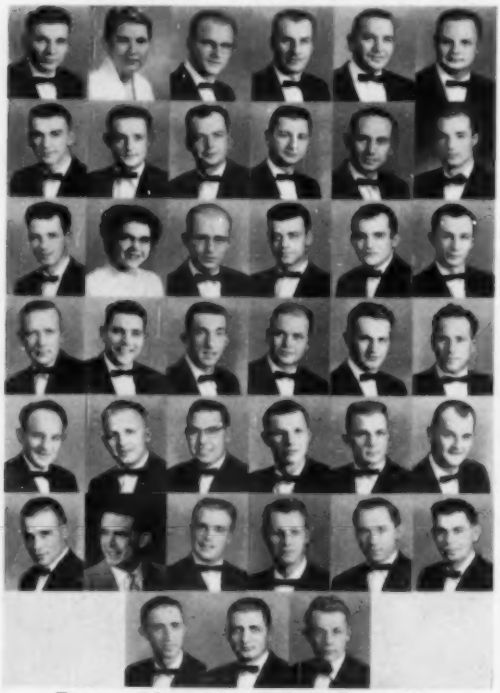
Third row—James L. Kastens, Perry W. Page, Brian C. Cummings, T. Douglas Heath, Thomas E. Roberts, Irvin M. Schwalm, Wayne F. Frerichs, Jay A. Peterson, Ralph L. Ebers, Robert V. VanCamp, Max H. Zahner, Jr.

Fourth row—Jerry L. Schrader, Wayne E. Bailie, Theron A. Haufler, Alvin E. Melcher, James A. Laughlin, Dean A. Price, Harry A. Hopson, Galen L. Heritage, David E. McKnight, Glenn E. Hoskinson, William G. Wisecup.

Fifth row—Gerhard A. Malm, Phillip F. Eckhart, Robert D. Lewis, Donald L. Wainscott, Robert F. Frank, Joseph F. Coyle, William J. Murray, Frederick S. Idtse, Jr., Thomas F. Burton, Leland D. Kendall, Eldon D. Miksch.

Sixth row—Robert C. Asmus, Philip D. Moorhead, Gerald J. Miller, Paul O. Thomas, Clarence G. Heath, Raymond F. Sis, John G. Ravnikar, Keith Van Steenbergh, Louis E. Schindler, Richard W. Kohlschreiber, John R. Markley.

Graduating Class, 1957, College of Veterinary Medicine, State College of Washington



Top row (left to right)—David R. Barnett, Florence B. Barton, Kenneth R. Behrends, Donald L. Brookhart, Melvin C. Burns, Richard R. Chalquist.
Second row—Donald E. Clark, Stanley B. Coe, Robert B. Cook, Edwin D. Crawford, Eugene L. Davis, James W. Davis.
Third row—John J. Doherty, Gay E. Dorius, Schuyler R. Enochs, Frank J. Fall, Jr., Alfred L. Hallowell, James R. Harr.
Fourth row—William W. Hawkins, Jr., Hubert L. Hopkinson, Jr., Richard I. Howard, Robert E. Huckfeldt, Charles L. Jinneman, James A. Klein.
Fifth row—William R. McFadden, Donald D. Mee, Robert W. Otto, James D. Proctor, Charles J. Sedgwick, Donald C. Shapton.
Sixth row—Alvin W. Smith, Homer K. Stevens (deceased), Jack G. Stevens, John W. Unis, Jr., Richard D. Waltermire, Ralph A. Wilder.
Seventh row—Lee B. Williams, William D. Wright, Hubert H. Yoder.

Washington State College.—At the 1957 commencement exercises of the College of Veterinary Medicine, State College of Washington, the following 39 candidates were presented for the D.V.M. degree:

David R. Barnett
Florence B. Barton
Kenneth R. Behrends
Donald L. Brookhart
Melvin C. Burns
Richard R. Chalquist
Donald E. Clark
Stanley B. Coe
Robert B. Cook
Edwin D. Crawford
Eugene L. Davis
James W. Davis
John J. Doherty
Gay E. Dorius
Schuyler R. Enochs
Frank J. Fall, Jr.
Alfred L. Hallowell
James R. Harr
William W. Hawkins, Jr.
Hubert L. Hopkinson, Jr.
Richard I. Howard
Robert E. Huckfeldt
Charles L. Jinneman
James A. Klein
William R. McFadden
Donald D. Mee
Robert W. Otto
James D. Proctor
Charles J. Sedgwick
Donald C. Shapton
Alvin W. Smith
Jack G. Stevens
John W. Unis, Jr.
Richard D. Waltermire
Ralph A. Wilder
Lee B. Williams
William D. Wright
Hubert H. Yoder

DEATHS

Star indicates member of AVMA

Alphus L. Abell (KCV '10), Monroe City, Mo., died April 23, 1957. Dr. Abell was a general practitioner. He is survived by his widow, two daughters, and two sons.

Ben Anderson (ISC '25), 58, Ruthton, Minn., died April 2, 1957. Dr. Anderson had practiced for several years in Canton, S. Dak., and was state veterinarian for South Dakota in 1937 and 1938 after which he practiced in Ruthton. His widow and a son survive.

Robert F. Batchelor (OSU '47), 36, Washington, D.C., died Feb. 26, 1957, of cancer. His widow, two children, and mother and father survive.

★Colonel C. F. Morse, Medical Corps (U.S. Army, Ret.), 82, San Francisco, Calif., first director of the Army Veterinary Service, as it was then called, and an honorary member of the AVMA, died on May 23, 1957, at Letterman Army Hospital.

Born in Vermont in 1874, Colonel Morse received his medical degree at the University of Vermont in 1896 and began his Army medical career in 1902 when he was commissioned first lieutenant. World War I found him in the Surgeon General's office, Washington, at the time the newly-authorized Veterinary Corps was being organized. He was selected to head the new service and pilot it through its formative stages, an assignment which he carried out with sympathetic understanding and distinction.

With the aid of several highly qualified civilian and military veterinarians, some of the latter being outstanding Army veterinarians from the days prior to a commission status for veterinary officers, Colonel Morse proceeded to recruit over 2,000 veterinarians and integrate them and their duties with other services of the Medical Department.

In recognition of his exceptionally capable and energetic work, and his friendly attitude toward the problems of the newborn veterinary service, Colonel Morse was made an honorary member of the AVMA in 1919. In 1920, his good work was further signalized when he was awarded the Distinguished Service Medal at the direction of President Franklin D. Roosevelt.

Colonel Morse retired from active duty in 1934. He is survived by his widow.

Nominations for Executive Board in Districts I and IX

As the result of primary balloting completed on May 30, the following nominees appear on final election ballots mailed on June 10 to members in the two districts:

DISTRICT I (Dominion of Canada)

Dr. R. McG. Archibald, Truro, N. S.
Dr. J. A. Henderson, Guelph, Ont.
Dr. T. Lloyd Jones, Guelph, Ont.
Dr. John N. See, Malton, Ont.
Dr. R. H. Wright, Dundas, Ont.

DISTRICT IX (Connecticut, Maine, Massachusets, New Hampshire, New York, Rhode Island, Vermont)

Dr. M. G. Fincher, Ithaca, N. Y.
Dr. L. J. Goss, New York, N. Y.
Dr. H. E. Grossman, Brooklyn, N. Y.
Dr. Edwin Laitinen, West Hartford, Conn.
Dr. J. L. McAuliff, Cortland, N. Y.

Drs. Erich R. Maschgan and Jo Anne Schmidt of Chicago served as tellers on June 3 and certified the results above reported.

The polls for this election closed on July 10, 1957, and the two candidates elected will take office for five-year terms at the conclusion of the annual meeting in Cleveland next August.

WOMEN'S AUXILIARY

President—Mrs. A. E. Coombs, Box 174, Skowhegan, Maine
Secretary—Mrs. F. R. Booth, 3920 E. Jackson Blvd., Elkhart, Ind.

Recipients of 1957 Achievement Awards Given by the AVMA Women's Auxiliary.—Eight years ago the Women's Auxiliary to the AVMA voted to present an annual cash prize and certificate to the senior student of each accredited school of veterinary medicine, in the United States and Canada, who had done the most to advance the standing of the veterinary profession and his school of veterinary medicine on the campus. The selection of the winners is left to the discretion of the respective veterinary schools.

We are grateful and thankful that, due to the generosity of our affiliated auxiliaries and to the increase in the dues of our members, we

Left to right:

Hilmer L. Jones
Alabama Polytechnic Institute

Charles L. Lippincott
University of California

Gene D. Carter
Colorado State University

Ernest Reit
Cornell University

Arnold C. Taft
University of Illinois

Russell Lindsey
University of Georgia

Bruce H. Ewald
Iowa State College

Raymond F. Sis
Kansas State College

Laurence H. Davis
University of Minnesota

Robert E. Lewis
Michigan State University

Garland D. Lindsey
University of Missouri

Guy Ouellet
University of Montreal

Anton A. Kammerlocher
Oklahoma A. & M. College

George R. Blind
Ohio State University

William Crossman
University of Pennsylvania

Gerald L. Van Hoosier
Texas A. & M. College

Sidney E. Milburn
Tuskegee Institute

R. D. O'Connor
University of Toronto

William E. McFaddan
State College of Washington

were able to increase the cash prize from $25 to $50 this year.

The records of the recipients indicate superior leadership, scholarship, and an amazing number of talents and accomplishments in their extracurricular activities. Many are veterans, married, and college graduates in other fields. These young men have clearly demonstrated that they possess the will, determination, mentality, personality, and other qualifications for successful careers in any phase of veterinary medicine.

We are extremely proud of these award winners and of the prestige and recognition they have brought to the veterinary profession. We congratulate each on his individual accomplishments, and wish for each a happy and successful career as a doctor of veterinary medicine.

s/(Mrs. E. E.) Freda Leasure,
Second Vice-President.

STUDENT CHAPTER ACTIVITIES

Colorado Chapter.—At the May 1, 1957, meeting of the Colorado State University Student Chapter of the AVMA, Dr. A. E. Alexander, instructor in pathology in the College of Veterinary Medicine, gave an illustrated talk on his work at the animal colony at Dugway Proving Grounds in Utah. He also discussed some of the aspects of biological and chemical warfare research.

The annual junior-senior banquet and ball was held at the Student Union Building on the night of May 11. Senior student John Popish was toastmaster and introduced the faculty of the College of Veterinary Medicine and the banquet speaker, Dean Rue Jensen. Music was furnished by the "Four Mugs," a quartette of freshman veterinary students. The dance which followed the banquet was attended by all veterinary students and the faculty of the veterinary college.

s/C. H. Lehrman, Secretary.

• • •

Kansas State Chapter.—Raymond F. Sis, Kansas State College senior, was recipient of the annual Women's Auxiliary to the AVMA award ($50) for special contributions to the college other than in scholarship.

Other 1957 awards went to: Franklin J. Heim and Wayne M. Frerichs, for proficiency in the four-year professional curriculum; John Markley for proficiency in large animal clinics; and Brian Cummings for proficiency in small animal clinics.

• • •

Illinois Chapter.—The following is a resumé of the activiites of the University of Illinois Student Chapter of the AVMA for the second semester of the 1956-1957 school year.

On Feb. 14, 1957, Dr. M. A. Alexander, Department of Dairy Science, told of his stay in India as advisor on a research project. Brigadier General Wayne O. Kester, on February 27, discussed the students' future in veterinary medicine and also gave an enlightening talk on equine practice. Dr. W. G. Magrane, Mishawaka, Ind., presented an illustrated talk on the use of adrenocortical hormones in ophthalmology, at the March 22 meeting. On April 4, Dr. O. Norling-Christensen, Wilmette, Ill., gave a thought-provoking talk on interprofessional relations, business methods, and ethics. Dr. C. N. Ruck, East St. Louis, Ill., presented a paper on ethics at the May 2 meeting. At this meeting, the following officers were elected: Albert J. Koltveit, president-elect; Leroy G. Biehl, vice-president; Melvin G. Dewey, treasurer; and Dale M. Bennett, secretary. The president for the fall semester will be Paul Trovillion.

The chapter has sponsored a petition to the University of Illinois Board of Trustees requesting full recognition of the College of Veterinary Medicine as a professional school in the full meaning of the term. This petition was submitted following the reception of this recognition by the College of Law.

The student scholarship recognition convocation was held May 14. Award winners were: James R. Meyer, Illinois State V.M.A. scholarship Award; Ira J. Aves, Illinois Veterinary Alumni Association Award; Arnold C. Taft, Women's Auxiliary Award; and Raymond T. Hamilton, Dean Emeritus Graham Award.

The annual spring banquet in honor of the graduating seniors was held May 18, 1957, at the Illini Union. Dancing followed the banquet.

s/Richard A. Schiltz, *Retiring Secretary.*

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative Bylaws.

ALLEN, ROBERT O.
R. D. No. 4, Upper Front St., Binghamton, N. Y.
D.V.M., New York State Veterinary College, 1938.

BAIRD, NORMAN G.
E-town Rd., Lumberton, N. Car.
D.V.M., Alabama Polytechnic Institute, 1937.

BALL, LESLIE
1104 Chaco, Farmington, N.M.
D.V.M., Colorado A. & M. College, 1956.

CARSLEY, MALCOM B.
Lake Shore Ave., Beverly, Mass.
D.V.M., Cornell University, 1947.

CHAPMAN, William B.
2404 N. Central Ave., Peoria, Ill.
D.V.M., St. Joseph Veterinary College, 1922.

CHAPPEL, REGINALD W.
Box 263, Shabbona, Ill.
D.V.M., Ontario Veterinary College, 1950.
COLLINS, ELWOOD R.
77337 Gratiot Ave., Detroit, Mich.
D.V.M., Michigan State College, 1951.
COVERT, MILTON H.
138 Inglewood Drive, Rochester, N.Y.
D.V.M., Cornell University, 1938.
DICKINSON, EARL O., JR.
880 South Colorado Blvd., Denver, Colo.
D.V.M., Colorado A. & M. College, 1954.
DONNELSON, ROGER D.
1034 Nicklin Ave., Piqua, Ohio.
D.V.M., Iowa State College, 1952.
FISCHMAN, HARVEY R.
430 Kinderdamack Rd., Oradell, N.J.
D.V.M., Ecole National Veterinaire D'Alfort, 1950.
FLORA, STANLEY H.
Box 121, Miles City, Mont.
D.V.M., Michigan State College, 1950.
GANDAL, CHARLES P.
38 S. Devoe Ave., Yonkers, N.Y.
D.V.M., Cornell University, 1951.
HALL, VANCE C.
940 N. Highland Ave., Hollywood, Calif.
D.V.M., Ohio State University, 1951.
HEARD, WELDON T.
3854 Federal Blvd., Denver, Colo.
D.V.M., Colorado A. & M. College, 1950.
JEHNICH, HUBERT
State Department of Agriculture, Dover, Del.
D.M.V., Hannover Veterinary College, 1953.
JEWELL, C. KENNETH
28 Woodstone Rd., Basking Ridge, N. J.
D.V.M., Kansas State College, 1947.
KNISELY, BURNELL E.
R. R. 2, Marion, Ohio.
D.V.M., University of Ohio, 1934.
KOHN, LEONARD
2276 Skokie Valley Rd., Highland Park, Ill.
D.V.M., Middlesex University, 1944.
LA FRANCE, RICHARD F.
Bridger, Mont.
D.V.M., Iowa State University, 1951.
MATHEWS, MARK W.
Lamar St., Dalton, Ga.
D.V.M., Alabama Polytechnic Institute
MEREDITH, JOHN S.
615 Wood St., Statesville, N. Car.
D.V.M., Alabama Polytechnic Institute, 1947.
MERKIN, VICTOR
635 Ogden Ave., Downers Grove, Ill.
D.V.M., Middlesex University, 1944.
MONTANEZ-RIVERA, LUIS A.
Isla Verde Rd., Rm. 11.2, Box 237, Carolina, P.R.
D.V.M., Ohio State University, 1947.
MORTON, LYNUS R.
Box 96, Aurelia, Iowa.
D.V.M., Kansas State University, 1939.
NICKELL, VERNIE L.
29 Beckner St., Winchester, Ky.
D.V.M., Ohio State University, 1943.
NOLAN, TIMOTHY F.
101 Mayes Ave., Springfield, Ky.
D.V.M., Alabama Polytechnic Institute, 1936.
OLDHAM, CARL M.
6364 N. Main St., Dayton, Ohio.
D.V.M., Ohio State University, 1937.
PYGATT, EDWARD
1627 N. Williams, Portland, Ore.
D.V.M., Tuskegee Institute, 1956.
REED, FRANCIS I.
26 South Grove, East Aurora, N.Y.
D.V.M., Cornell University, 1956.
SAMBOLIN, SAES QUINONES
Esperanza St., No. 14, Box 124, San German, P.R.
D.V.M., Alabama Polytechnic Institute, 1944.
SKROMS, JANIS V.
New Leipzig, N. Dak.
D.V.M., University of Latvia, Europe, 1942.
SKROMS, MARGRIETA
New Leipzig, N. Dak.
D.V.M., University of Latvia, Europe, 1942.
STONER, NORMAN H.
5460 South 12th, Kalamazoo, Mich.
D.V.M., Michigan State University, 1935.
SUTHERN, CHARLES B.
611 West 114th St., Apt. 6D, New York, N.Y.
D.V.M., Alfort Veterinary College, 1954.
TABA, PAUL
Linton, N. Dak.
D.V.M., University of Tartu, 1940.
WELBOURN, R. W.
213 West Washington St., Winchester, Ind.
D.V.M., Ohio State University, 1943.
ZAK, FRANK W.
55 North Bend St., Lynn, Mass.
D.V.M., Middlesex University, 1942.

Applicants — Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and names of his endorsers.

First Listing

FIGUEIREDO, JOSE B.
118 Woodmere Ave., East Lansing, Mich.
D.V.M., Escola Superior de Veterinaria, Brazil, 1943.
Vouchers: A. R. Drury and C. F. Clark.

Graduate Applicants

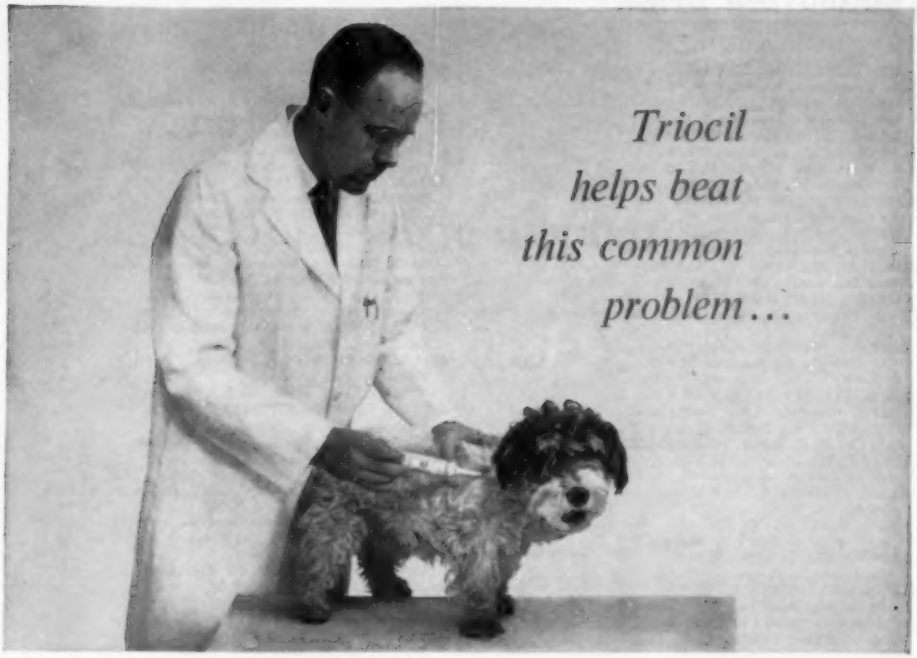
The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative Bylaws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

First Listing

Cornell University*

All of the following applicants were vouched for by Drs. J. Bentinck-Smith and D. D. Delahanty.

ABBOTT, RICHARD J., D.V.M.
80 Millbrook St., Worcester, Mass.
AHEARNE, ALLAN J., D.V.M.
c/o C. N. Foose, Jr., P.O. Box 487.
Cumberland, Md.
BAKER, WILLIAM H., D.V.M.
5 W. Grimsby Rd., Kenmore, N. Y.
BERMAN, LEWIS H., D.V.M.
4915 Broadway, New York, N. Y.
BEZNER, GERALD A., D.V.M.
3806 Harlem Rd., Buffalo, N. Y.
BRIGGS, ROBERT H., D.V.M.
106 Gorham St., Canandaigua, N. Y.
CARD, CLYDE S., JR., D.V.M.
Western Ave., Augusta, Maine.
CHOPAY, CHARLES A., D.V.M.
200 Walberta Rd., Syracuse, N. Y.
CHURCHILL, STANWOOD B., D.V.M.
Lyndonville, Vt.
CORWIN, PAUL, D.V.M.
190 Bedell Ave., Hempstead, N. Y.
CRIST, C. FRED, D.V.M.
West and Madison, Cortland, N. Y.
DAVIS, DANIEL B., JR., D.V.M.
Box 128, Hopewell, N. J.
DAVIS, FORREST H., D.V.M.
c/o Dr. R. Milkey, Hungary Rd., Granby, Conn.
DOERGE, HENRY F., D.V.M.
312 Highland Rd., Ithaca, N. Y.
FOWLER, ROLAND B., D.V.M.
1572 S. Main St., Cheshire, Conn.
FRITZ, ALBERT C., D.V.M.
c/o Dr. W. K. Loomis, Vernon, N. Y.



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Topical infections—including those which won't respond to antibiotics – can be quickly controlled with Triocil. You'll find Triocil a valuable aid in treating skin infections, other dermatoses such as otitis externa, moist eczema, balanitis, cuts, lacerations, gland infections . . . in fact, in most external conditions where infection is a factor.

Triocil is effective because

- it has a broad-spectrum action, against single or mixed infections, gram-negative and gram-positive bacteria;
- it has a strong affinity for tissue, resulting in a prolonged action;
- it remains active in the presence of pus or pus formers;
- no resistance to Triocil has developed in extensive clinical tests.

Administration: Triocil Ointment is applied directly to the affected area. It spreads easily, adheres well, does not stain. One application daily is usually sufficient, but treatment may be repeated if necessary.

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Available exclusively through ethical veterinary distributors.

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BRAND OF HEXETIDINE

DIVISION OF VETERINARY MEDICINE

WARNER-CHILCOTT

Laboratories MORRIS PLAINS, N. J.

GEIB, LUDWIG W., D.V.M.
54 Grant Ave., Brooklyn, N. Y.
GORMAN, THOMAS N., D.V.M.
303 Hillview Place, Ithaca, N. Y.
GRAMBOW, RICHARD C., D.V.M.
519 E. Buffalo St., Ithaca, N. Y.
GRAY, HARRY L., JR., D.V.M.
207 Muriel St., Ithaca, N. Y.
HOWE, WILLIAM M., D.V.M.
66 Glen Ave., Glens Falls, N. Y.
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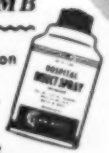

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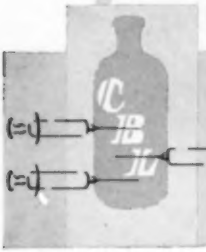

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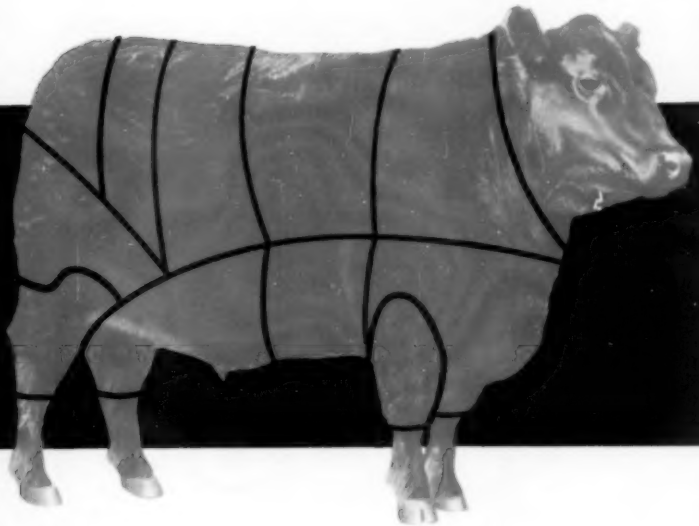

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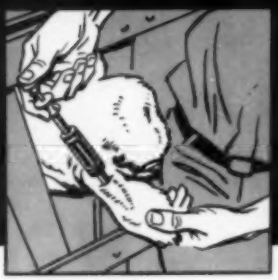

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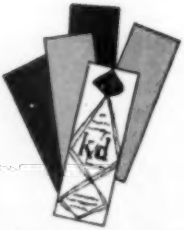

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COMING MEETINGS

Alabama Polytechnic Institute. Annual conference for veterinarians. School of Veterinary Medicine, Auburn, July 21-24, 1957. R. S. Sugg, dean.

Canadian Veterinary Medical Association. Annual meeting. Hotel Georgia, Vancouver, B. C., July 22-24, 1957. James Archibald, Ontario Veterinary College, Guelph, Ont., vice-president.

Colorado Veterinary Medical Association. Annual meeting. LaCourt Hotel, Grand Junction, Aug. 9-10, 1957. G. H. Gilbert, 5500 Wadsworth Blvd., Arvada, Colo., secretary.

American Association of Veterinary Bacteriologists. Annual meeting. Ohio State University, Columbus, Ohio, August 16, and the Ohio Agricultural Experiment Station, Wooster, Aug. 17, 1957. C. H. Cunningham, College of Veterinary Medicine, Michigan State University, East Lansing, secretary.

American Veterinary Medical Association. Annual meeting. Cleveland Auditorium, Cleveland, Ohio, Aug. 19-22, 1957. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

New Mexico Veterinary Medical Association. Annual meeting. Albuquerque, Sept. 9-10, 1957. William E. Kraus, 3018 Rio Grande Blvd., N.W., Albuquerque, president.

Washington State Veterinary Medical Association. Annual meeting. Monticello Hotel, Longview, Sept. 9-10, 1957. William F. Harris, 1102 E. Main St., Puyallup, Wash., secretary.

New York State Veterinary Medical Society. Annual meeting. Hotel Statler, Buffalo, Sept. 11-13, 1957. M. H. Covert, 138 Inglewood Dr., Rochester 19, N. Y., secretary.

Northern Illinois Veterinary Medical Association. Fall meeting. Rockford, Sept. 18, 1957. J. G. Hardenbergh, 121 Bridge Street, Rockton, Ill., secretary-treasurer.

New England Veterinary Medical Association. Annual meeting. Equinox House, Manchester, Vt., Oct. 6-9, 1957. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

Purdue University. Annual short course for veterinarians. Purdue University, West Lafayette, Ind., Oct. 9-11, 1957. L. M. Hutchings, secretary.

Florida State Veterinary Medical Association. Annual meeting. Fort Harrison Hotel, Clearwater, Oct. 13-15, 1957. Robert P. Knowles, 2934 N.W. 17th Ave., Miami 37, Fla., secretary.

University of Missouri. Annual short course for graduate veterinarians, Oct. 14-15, 1957, School of Veterinary Medicine, University of Missouri, Columbia. Cecil Elder, chairman.

Pennsylvania State Veterinary Medical Association. Annual meeting. Hotel Brunswick, Lancaster, Oct. 16-18, 1957, Raymond C. Snyder, N. W. Corner Walnut St. and Copley Rd., Upper Darby, secretary.

Texas Veterinary Medical Association. Annual meeting. Baker Hotel, Dallas, Oct. 16-18, 1957. Paul B. Blunt, 712 Maverick Bldg., San Antonio, Texas, secretary.

Eastern Iowa Veterinary Association. Annual meeting. Hotel Sheraton-Montrose, Cedar Rapids, Oct. 17-18, 1957. F. E. Brutsman, Traer, Iowa, secretary.

Illinois, University of. Annual veterinary conference and short course. School of Veterinary Medicine, University of Illinois, Urbana, Oct. 17-18, 1957. L. E. Boley, chairman.

Southern Veterinary Medical Association. Annual meeting. Hotel Roanoke, Roanoke, Va., Oct. 27-30, 1957. A. A. Husman, P. O. Box 91, Raleigh, N. Car., secretary.

Cornell University. Nutrition conference. Cornell University, Ithaca, N.Y., Oct. 31-Nov. 1, 1957. J. K. Loosli, Stocking Hall, Cornell University, Ithaca, N.Y., chairman.

Animal Care Panel. Annual meeting. Bellevue Hotel, San Francisco, Calif., Nov. 7-9, 1957. R. J. Flynn, Box 299, Lemont, Ill.

Kansas Veterinary Medical Association. Annual convention. Hotel Broadview, Wichita, Jan. 12-14, 1958. K. Maynard Curts, 5236 Delmar Ave., Kansas City 3, Kan., secretary.

Intermountain Veterinary Medical Association. Annual meeting. Hotel Utah, Salt Lake City, Jan. 16-18, 1958. R. A. Bagley, 4600 Creek View Dr., Murray, Utah, secretary.

Minnesota Veterinary Medical Association. Annual meeting, St. Paul, Jan. 20-22, 1958. B. S. Pomeroy, School of Veterinary Medicine, University of Minnesota, St. Paul 1, Minn.

Oregon Veterinary Medical Association. Winter meeting. Portland, Jan. 31-Feb. 1, 1958. Edward L. Holden, P. O. Box 445, Oswego, secretary.

Kansas Veterinary Medical Association. Annual meeting. Hotel Broadview, Wichita, Feb. 9-11, 1958. K. Maynard Curts, 5236 Delmar Ave., Kansas City 3, Kan.

Foreign Meetings

British Veterinary Association, Annual congress. University of Cambridge, Cambridge, England, Aug. 25-31, 1957. Mr. F. Knight, 7, Mansfield St., Portland Place, London, W. 1, general secretary.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2, Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Alameda Contra Costa Veterinary Medical Association, last Wednesday of each month. Leo Goldston, 3793 Broadway, Oakland 11, Calif., secretary.

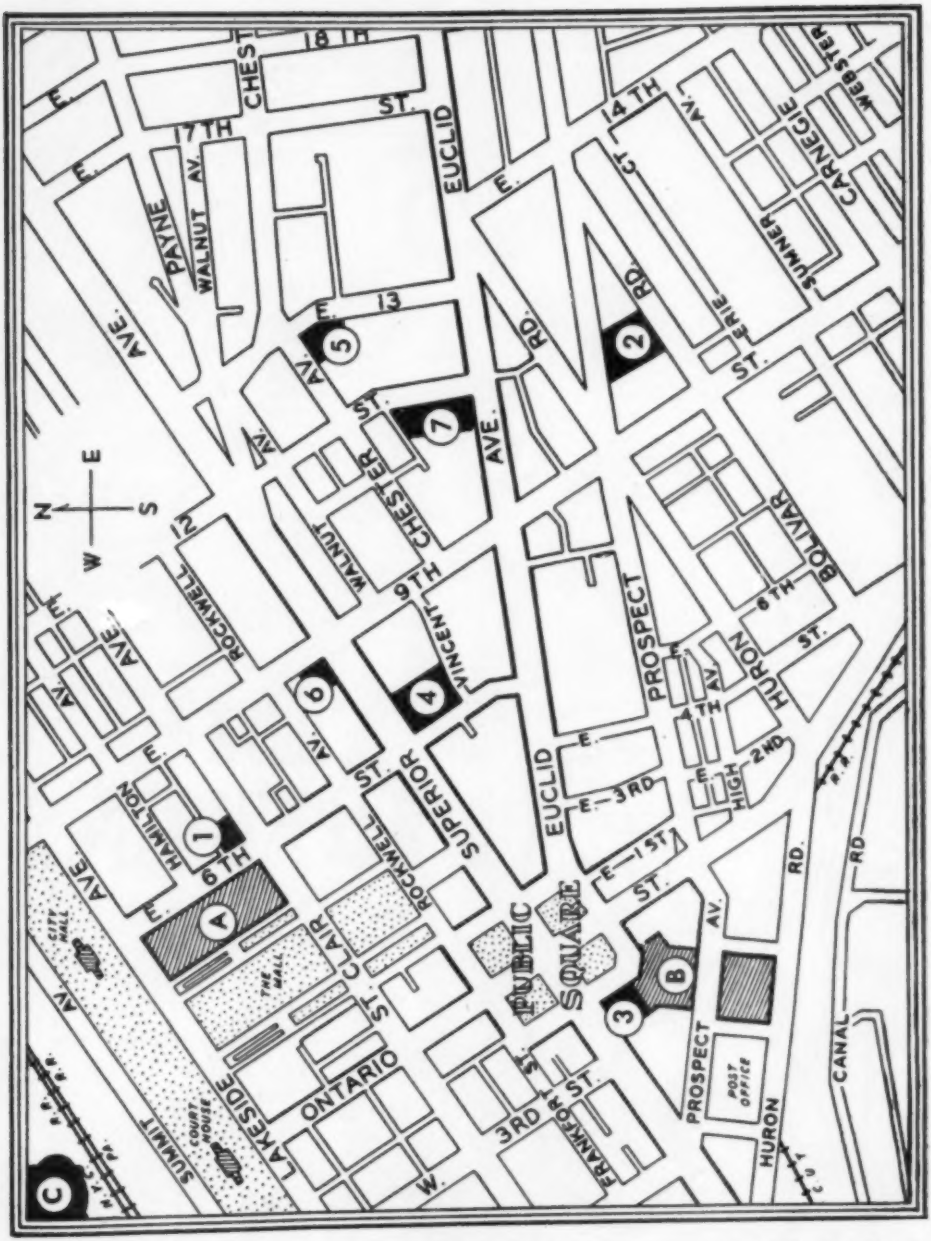
Bay Counties Veterinary Medical Association, the second Tuesday of each month. Maurice L. Boevers, 3394 Mt. Diablo Blvd., Lafayette, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barnaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.



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B. Union Station
C. Stadium—Home of the Indians and the Browns

1. Auditorium Hotel
2. Carter Hotel
3. Cleveland Hotel
4. Hollenden Hotel
5. Manger Hotel
6. Olmsted Hotel
7. Statler Hotel

HOTEL RESERVATIONS — CLEVELAND CONVENTION

Ninety-Fourth Annual AVMA Meeting, Aug. 19-22, 1957

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotels and Rate Schedule

Hotel	Single	Double	Twin	Suite
1. Auditorium	$4.75- 8.00	$ 7.50-10.00	$10.00-12.00	$25.00
2. Carter	$5.50- 9.25	$ 8.50-13.50	$ 9.50-14.25	$26.50-36.50* $40.00-48.25†
3. Cleveland	$6.50-11.00	$ 9.00-14.00	$10.50-20.00	$20.00-55.00* $44.00-70.00†
4. Hollenden	$5.00- 9.00	$ 8.00-12.00	$ 9.00-14.00	$20.00-30.00* $30.00-60.00†
5. Manger	$5.00- 9.00	$ 7.00- 9.00	$ 9.00-13.00	$18.00-45.00* $36.00-75.00†
6. Olmsted	$4.25- 9.00	$ 7.00-11.00	$ 8.50-11.00	$17.00-20.00
7. Statler	$6.00-13.00	$10.00-16.00	$11.00-18.50	$24.00-32.00* $46.50-48.50†

*—2-room suite
†—3-room suite

Tear Here

RESERVATION FORM — AVMA CONVENTION — CLEVELAND

To: HOUSING BUREAU, Cleveland Convention and Visitors Bureau, Inc., 511 Terminal Tower, Cleveland 13, Ohio.

Hotel	Accommodations
(Three choices MUST be shown)	_____Single Room(s) @ $_____
First choice hotel _____	_____Double Room(s) @ $_____
Second choice hotel _____	_____Twin-bed Room(s) @ $_____
Third choice hotel _____	_____2-room suite @ $_____
	_____3-room suite @ $_____

Arriving on (date)_____ at_____ ( ) a.m. ( ) p.m.

Departing on (date)_____

Will be occupied by (attach list of additional names if necessary).

Your Name (print or type) _____

Street Address _____

City _____ Zone _____ State or Province _____

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. R. C. Lawson, 4040 El Camino, Palo Alto, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2533 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Central Florida Veterinary Medical Association, the first Tuesday of each month, time and place specified monthly. Jack H. McElyea, 5925 Edgewater Drive, Orlando, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodsons Restaurant. P. S. Roy, 4443 Atlantic Blvd., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. T. R. Geci, 108B Catherine Ave., Pensacola, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. J. J. McCarthy, 500-25th Street, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Frank Mueller, Jr., 4148 E. 8th Ave., Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. W. B. Martin, Jr., 3002 N. W. 6th St., Gainesville, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

A bullet for Charlemagne

THE Caco general got slowly to his feet. Behind him, in the darkness, stood a hundred Haitian outlaws. At his feet was a small fire.

Confronting him, the tattered young man in blackface disguise saw the firegleam on his white silk shirt and pearl handled pistol and knew this was the murderous chieftain, Charlemagne Masena Peralte. The man he'd come for, through a jungle and a 1200-man encampment, past six hostile outposts, risking detection and certain death.

Charlemagne squinted across the fire. "Who is it?" he challenged in Creole.

There was no alternative; Marine Sergeant Herman Hanneken drew an automatic and fired.

The night exploded into gunflame, most of it from Hanneken's second-in-command, Marine Corporal Button, and his handful of disguised Haitian gendarmes. But the shot that killed Charlemagne was the one which would finally end Caco terror and bring peace to Haiti.

Sergeant Hanneken is retired now—as Brigadier General Hanneken, USMC, with a Silver Star, a Legion of Merit, a Bronze Star, a Gold Star, and a Navy Cross. And, for his expedition against Charlemagne, November 1, 1919, the Medal of Honor.

The Herman Hannekens are a rare breed, it is true. Yet in all Americans there is much of the courage and character which they possess in such abundance. Richer than gold, it is the *living* wealth behind one of the world's soundest investments—United States Savings Bonds. It backs our country's guarantee: safety of principal up to any amount, and an assured rate of return. For real security, buy Bonds regularly, through your bank or the Payroll Savings Plan.

Now Savings Bonds are better than ever! Every Series E Bond purchased since February 1, 1957, pays 3¼% interest when held to maturity. It earns higher interest in the early years than ever before, and matures in only 8 years and 11 months. Hold your *old* E Bonds, too. They earn more as they get older.

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GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. H. V. Henderson, Reinbeck, Iowa, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

East Central Iowa Veterinary Medical Society, the second Tuesday of every month. Dr. W. T. Rugger, Oxford, secretary.

Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, Robert E. Guilfoil, 18 No. 2nd St., Kansas City 18, Kan., secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

Pitman-Moore to Sponsor Closed-Circuit T.V. in Switzerland

Pitman-Moore Company, Indianapolis, in cooperation with R.C.A., will sponsor a closed-circuit telecast of the proceedings of the Fourth International Poliomyelitis Conference in Geneva, Switzerland, July 8-12.

Pioneer in closed-circuit telecasting of scientific meetings, Pitman-Moore Company presented its first closed-circuit telecast at the 1951 annual meeting of the American Veterinary Medical Association. Since then, the company has sponsored telecasting of surgical and other professional procedures at AVMA and A.A.H.A. meetings each year.

To be attended by authorities on polio from all over the world, the International Polio Conference will be held simultaneously in two locations in Geneva. All sessions will be telecast in the four official languages of the conference—English, French, German, and Spanish. Each address will be translated from the original into the other three languages through mechanisms of the type used by the United Nations.

Pitman-Moore has had an important part in the fight against infantile paralysis. Entering the field in 1953 in preparation for the 1954 field trials, in 1955, the company supplied vaccine to all parts of the country immediately upon the announcement of the famous Francis Report on April 12. It is the second largest producer of the vaccine.

Kenneth F. Valentine, Pitman-Moore president, will attend the Geneva conference, accompanied by Dr. S. R. Bozeman, director of the firm's biological laboratories, and John R. Jewett, who is responsible for the company's closed-circuit television activities.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Hotel, Spring Ave. and Lindell Blvd. Allen B. Shopmaker, 136 N. Meramec, Clayton 5, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genesee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. R. Muller, 43 Church St., Lambertville, N. J., secretary.

Southern New Jersey Veterinary Medical Association, the third Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. W. E. Snyder, E. Kings Highway and Munn Ave., Haddonfield, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

New York State Veterinary College. Annual conference for veterinarians. Cornell University, Ithaca. W. A. Hagan, New York State Veterinary College, Cornell University, Ithaca, N. Y., dean.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. Joseph A. Lombardo, 411 Woodlawn Ave., Greensboro, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. John G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Thursday of each month in the Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. James R. Burgess, Rockingham, N. Car., secretary.

OHIO—Cuyahoga County Veterinary Medical Association, the first Wednesday of each month, September through May (except January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Forrest H. Stockton, 2716 S.W. 29th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 530 S. Madison St., Tulsa, Okla., secretary.

PENNSYLVANIA—Del-High Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

With the recent grants-in-aid of $1,395,285, more than $2,000,000 has been allocated by the Heart Association in 1957 to support scientific studies related to the heart and blood vessel diseases.

Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary St., Richmond 20, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. L. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.). R. J. O'Hern, P. O. Box 617, Cumberland, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

WISCONSIN—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madison, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. W. E. Lyle, P. O. Box 107, Deerfield, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. E. S. Scobell, Rt. 2, Wausau, Wis., secretary.

Parke-Davis Produces New Influenza Vaccine

In less than two weeks after the U. S. Government asked leading pharmaceutical houses to produce a vaccine to combat the new type of influenza which has swept through much of Asia, Parke-Davis & Company developed an experimental vaccine for clinical trial.

Dr. Fred D. Stimpert, Parke-Davis director of microbiological research, cautioned that the effectiveness of the vaccine can not be definitely determined until the tests are completed.

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SSL-5	30″	36″	28″
SSL-6	30″	48″	28″
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For JOURNAL dated *15th of month* — 22nd of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Veterinarians

Assistant veterinarian wanted in New Jersey small animal hospital, near coast. State references, experience, salary expected in first letter; N. J. license. Address "Box L 2," c/o JOURNAL of the AVMA.

Veterinarian wanted for mixed but mainly small animal practice; knowledge of poultry pathology. Good prospects. Address "Box L 29," c/o JOURNAL of the AVMA.

Assistant veterinarian wanted for small animal hospital. Must have New Jersey license. State qualifications and salary expected. Address "Box L 30," c/o JOURNAL of the AVMA.

Veterinarians wanted for meat inspection positions under a new compulsory state meat inspection program. For full particulars write: Office of the State Veterinarian, State Dept. of Agric., Salem, Oregon.

Veterinarian wanted as assistant in modern small animal hospital in South. Salary $400.00 per month. Address "Box L 34," c/o JOURNAL of the AVMA.

Veterinarian wanted for staff of large hospital for small animals in New York City. New York license required. Opportunity. Address "Box L 35," c/o JOURNAL of the AVMA.

Wanted—Positions

Wish to associate with small animal practitioner, leading to partnership plan or ownership. Experienced, married, 32; have capital. Address "Box L 27," c/o JOURNAL of the AVMA.

Veterinary surgeon, 35, Univ. of Budapest graduate, 10 years experience, intending to immigrate to U.S.A., wants position as assistant to established practitioner. Dr. Werner Stumm, 50 Oakstreet, Lexington, Mass.

Graduate, 1947, married, experienced in small animals and regulatory work wishes employment, or partnership, or will buy; Illinois, Indiana, and Michigan. Presently employed in small animals; will answer all. Address "Box H 41," c/o JOURNAL of the AVMA.

1955 graduate B.S. and D.V.M. desires position with commercial firm. Will be discharged from the Service in Sept. Will travel. Practice and business experience. Desire research and development type work with potential. Address "Box L 33," c/o JOURNAL of the AVMA.

Young 1956 graduate desires position leading to partnership or purchase of mixed or small animal practice. Prefer the midwest or southwest. Married. Address "Box L 28," c/o JOURNAL of the AVMA.

Graduate B.S., M.S., V.M.D., 1956, married, desires position in research or development. Experience in large and small animal practice. Available immediately; will travel. Address "Box L 31," c/o JOURNAL of the AVMA.

Graduate, 1952, five years' experience in general practice, desires position in field research or product development with a drug or pharmaceutical company. Address "Box L 32," c/o JOURNAL of the AVMA.

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Wish to purchase, or lease with option, established small animal hospital, preferably with living quarters. Address "Box L 26," c/o JOURNAL of the AVMA.

Want to buy or lease mixed practice or small animal practice in New York or Conn. Address "Box L 25," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Hospitals, kennels, small animal practice, lovely home for sale in northern West Virginia. Large animal opportunity. Beautiful acreage; select clientele. Practice can be increased as desired. Address "Box L 3," c/o JOURNAL of the AVMA.

Long established small animal hospital in Florida for lease. Fine location; excellent clientele. Cash or terms. Address "Box L 9," c/o JOURNAL of the AVMA.

Completely equipped boarding kennel for sale; fine clientele. Separate building for veterinary office; partially furnished two bedroom, two bath, river front home. No veterinarian in this growing community, near Ellinor Village. Mr. & Mrs. H. W. Beatty, Box 123, Ormond Beach, Florida.

Miscellaneous

Pregnancy diagnosis in mares—45th to 150th day. Request mailing tubes; $7.00, 2 or more, $6.00 each. Pregnancy Diagnostic Laboratories, Dysart, Iowa.

Artificial Udder—Beco Litter Feeder—nurses 8 puppies simultaneously. Stays warm; easily cleaned and sterilized. Complete unit, $15; guaranteed. Breeders Equipment Co., Flourtown, Pa.

Breedersleve—the disposable obstetrical sleeve. Package of 25 with detachable chest band, $5.00; lower wholesale prices. Free sample upon request. Breeders Equipment Co., Flourtown, Pa.

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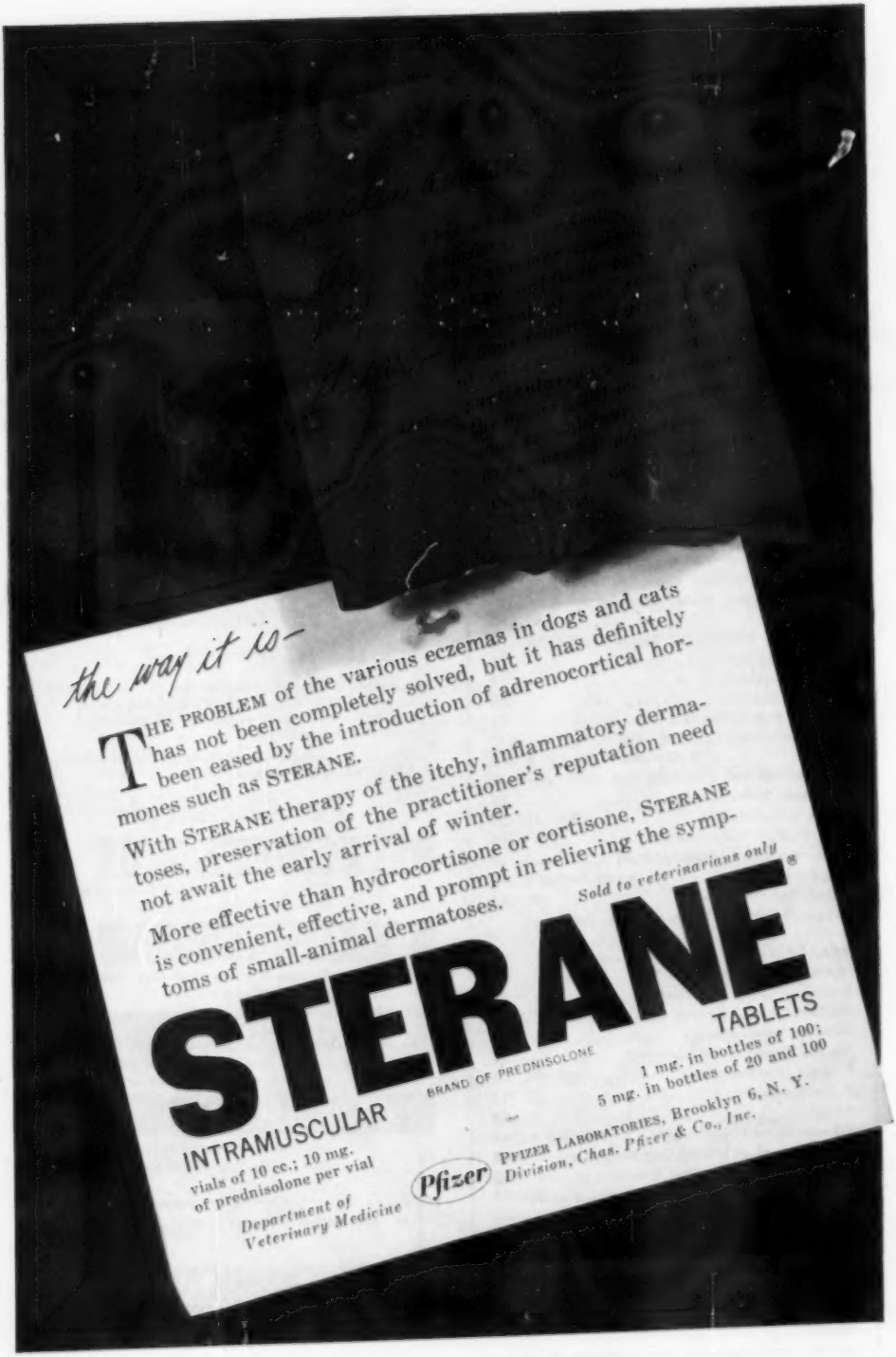
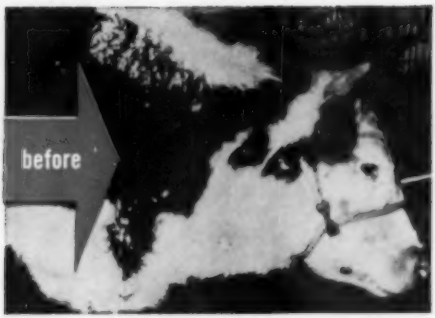
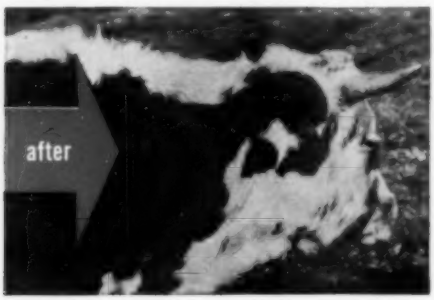

the way it is—
THE PROBLEM of the various eczemas in dogs and cats has not been completely solved, but it has definitely been eased by the introduction of adrenocortical hormones such as STERANE.
With STERANE therapy of the itchy, inflammatory dermatoses, preservation of the practitioner's reputation need not await the early arrival of winter.
More effective than hydrocortisone or cortisone, STERANE is convenient, effective, and prompt in relieving the symptoms of small-animal dermatoses.
Sold to veterinarians only
STERANE®
BRAND OF PREDNISOLONE
INTRAMUSCULAR
vials of 10 cc.; 10 mg. of prednisolone per vial
TABLETS
1 mg. in bottles of 100;
5 mg. in bottles of 20 and 100
Department of Veterinary Medicine
Pfizer
PFIZER LABORATORIES, Brooklyn 6, N. Y.
Division, Chas. Pfizer & Co., Inc.

Jen-Sal



Wart Vaccine *clears up virus-borne seed warts of cattle after 2 injections*



Dramatic recovery! You can be sure of it when you use Jen-Sal's exclusive Chick Embryo Origin Wart Vaccine (Bovine). The pictures above present graphic evidence of the remarkable success with which Jen-Sal Wart Vaccine is used in cattle raising countries all over the world.

Typical case histories show marked wart degeneration following an initial 25 cc. dose administered 24 cc. subcutaneously and 1 cc. intradermally in the caudal fold. A second 25 cc. subcutaneous dose, given ten days after the first, fosters complete recovery in three to five weeks.

JEN-SAL WART VACCINE (BOVINE)/50 cc. vials

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Kansas City, Missouri